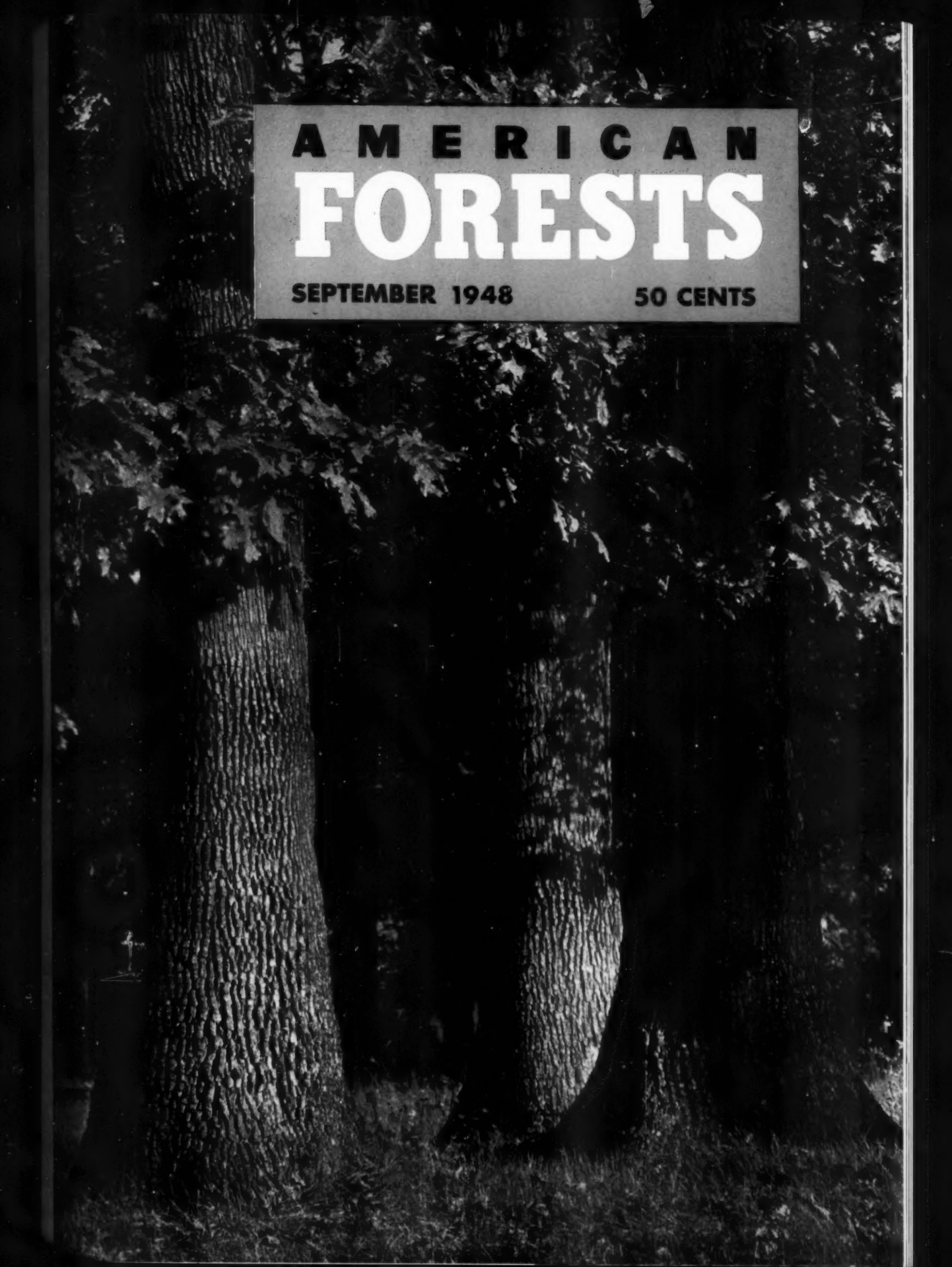
AMERICAN
FORESTS
SEPTEMBER 1948
50 CENTS

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BELL TELEPHONE SYSTEM

AMERICAN FORESTS

Published by The American Forestry Association

VOLUME 54 SEPTEMBER, 1948 NUMBER 9

ERLE KAUFFMAN
Editor

JAMES B. CRAIG
Assistant Editor

ALBERT G. HALL
Associate Editor

FRED E. HORNADAY
Advertising Director

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Forests in the World Economy

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"The Three Sisters"
Photograph of Ohio oaks by Kabel Art Photos

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Ricketts Glen—Pennsylvania
Photo by U. S. Forest Service

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LETTERS TO THE EDITOR

Memorials to Fire Heroes

SIR: The dedication on May 28, 1948, of a memorial in tribute to two Plymouth, Massachusetts, volunteer forest fire fighters, Herbert R. Benton and James H. Devitt, who lost their lives fighting a forest fire on May 4, 1937, recalls to memory other disasters where heroes have died in forest fires.

United States Forest Ranger Donald R. Gaudineer was stationed on the Cheat District of the Monongahela National Forest at Parsons, West Virginia. He lost his life on April 28, 1946, in a futile effort to save his children from their burning home. A forest fire lookout tower and picnic area have been dedicated to the memory of this fire fighter.

On July 8, 1948, Alton M. Markham, state forest ranger on the southern district in Rhode Island, died at the South County Hospital in Wakefield, Rhode Island. The cause of his death has not been definitely determined but his condition was accentuated by his vain attempt to rescue two children and two adults from a burning building on April 19, 1948.

On October 19, 1939, in the State of Pennsylvania, impressive and solemn ceremonies were conducted in honor of eight boys who gave their lives to protect our forests. The disaster occurred October 19, 1938, in north central Pennsylvania, not far from Emporium. The autumn day was ideal to be out in the woods. It was also ideal weather for optimum burning conditions in the forest. There had been no rain for weeks and the ground cover was almost as dry as powder. Enrollees and supervisory personnel at the CCC camp near Cameron, Pennsylvania, had responded to several fire calls during the previous twenty-four hours. The fire which proved fatal to seven enrollees and Foreman Gilbert Mohney was "just another fire" which must be controlled in line of duty. The details of this gruesome episode in the history of CCC will never be positively known.

The memorial, constructed by the CCC from the Cameron camp includes an attractive spring development and drinking fountain, rustic shelter and picnic ground along U. S. Highway No. 120 located between Emporium and Cameron, Pennsylvania. A bronze plaque erected by enrollees of the camp and purchased by the accumulation of pennies donated by CCC members and camp officials of the Northern District of Pennsylvania is attached to one of the larger stones of the retaining wall.

About eleven years ago on May 4, 1937, a serious forest fire started in the Plymouth woods of Massachusetts and burned for two days causing considerable loss to timber and damage to wildlife. On the afternoon of May 4, 1937, a group of volunteer fire fighters battling the flames along Jordan Road near the gates to the Symington estate was trapped by flames

Memorial to seven CCC boys who died fighting forest fire near Cameron, Pennsylvania

in a sudden shift of wind. The fire roared across the road and all but two of the men escaped. These unfortunates were engulfed in the roaring flames and burned to death, their charred bodies being found shortly after among the smouldering stumps and roots.

Two years later a citizen of the town conceived the idea of a memorial to these men and to all other fire fighters who had given their lives in the protection of the woodlands and wildlife of the Plymouth area. Solicitation was made quietly among a few of the citizens and through the cooperation of the local school department additional money was obtained from the school children of Plymouth who gave their pennies for this cause. A field stone and marker were placed at the base of the fire tower on the Pine Hills which overlooked the scene of the tragedy.

It is encouraging to note this and other public acknowledgments to our forest fire fighters who lost their lives. But somehow one wonders if those who do not participate in such local testimonials might not memorialize these men, and all forest fire heroes, by a much wider and ever vivid consciousness of the dangers inherent in forest fires and by avoiding any act that might again cause such danger and disaster.—*Edward Ritter*, forester, Eastern Region, U. S. Forest Service.

For Wasteland Betterment

SIR: I am heartily in favor of Francis L. Schowe's letter in the June issue of your publication, asking that consideration be given to the betterment of the wastelands of our nation.

Of all the wastelands in the United States, we also have our share of it in the midwest—so much of it has been constantly in production the past fifty to seventy years that now it must have a rest. Other land that has been in grass and woods is now eroded to the extent that it must be brought into shape. In both cases hard work and expense is our solution.

I think it is high time that both lands should be reversed. Brush dams and plugging gullies will make virgin soil. Tree planting and re-seeding prevent siltation into reservoirs. Fertilization at 35 percent in five years will not clear up infection. Fish and wildlife also must be considered. School and Indian land, timberland and grass land should be put into crops.

The Pick-Sloan Plan will be benefited immensely if we reverse our lands. Too many laws and bills are passed although some would be very good if put into effect; the Norris-Doxey bill, intended to take its part on the Clarke-McNary program, has been much neglected. — *Arthur P. Holst*, Omaha, Nebraska.

Trail Rider Bouquets

SIR: It is a pleasure to let you know how much I enjoyed the Trail Ride trips. Each was different, but the people on both were fine. By the second trip I could climb a mountain on a rest day. All of us were enthusiastic about Joe Murphy (the outfitter) and his boys. Elers Koch (AFA representative) contributed to the first trip as did Dr. George (medical officer) who knows the country well. Ken Davis (another AFA representative) was an unusually fine leader. He got us all going—even got me fish-

Good style in the woodpile

A hard-working "Caterpillar" Diesel D4 Tractor, equipped with Traxcavator, has paid for itself two or three times over in time and labor saved since it went to work for Consolidated Paper Corp. Ltd., in operations near Three Oaks, Quebec.

Fitted with bucket, as shown here, it removes accumulated bark and trash from the pulpwood storage area. With loading fork instead of bucket, it stock-piles, loads and unloads pulpwood. Then, with bulldozer blade, it rough-grades roads, levels dumps, clears snow—solves numbers of other tough earthmoving jobs. And through it all, the drawbar is free for all kinds of pulling assignments.

"Caterpillar" Diesels are standard equipment in the lumber and logging industries. Wherever you go, you'll find them turning in steady, dependable performances—and at sizable savings in operating costs. Every unit is backed by dealer service which has won a reputation as "the best in the business."

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ing, something new to me. I feel very appreciative of the values of the wilderness trips, of the beauty, the companionship, the fun.—*Yvonne Blumenthal*, New York City.

SIR: I just wanted to let you know what a wonderful time I had on my wilderness trip into the Flathead-Sun River area. I wish to compliment you upon the outfitter, Mr. Joe Murphy. Everything was conducted in such an orderly and quiet fashion that it was a pleasure to be on the trip, in spite of rain, cold and other hardships. Your representative, Kenneth Davis, was a credit to the Association. He was very patient and kind in his help. —*Maurice M. Jackson*, Chicago, Illinois.

SIR: I am back at my job after my first Trail Ride, the Flat Tops Expedition, and I am most enthusiastic about it. I haven't a single criticism to make. The riders and staff seemed to me a very congenial group. I enjoyed the food, the camp fires, the riding, the scenery—all of it, and I am glad that I have some good pictures as a permanent record. These trips are a very worthwhile project for the association to sponsor.—*Eugenia Spriestersbach*, Oxford, Ohio.

SIR: Just got through reading Bernard de Voto's "Sacred Cows and Public Lands" in Harper's July issue — a thorough rebuke to pressure groups working toward the removal of grazing controls. The public should see Marble's (Colorado) main street of mud and toppled shacks and milling furniture as a result of overgrazing and wasted water to become more conscious of the insidious workings of land grabbers and abusers of privilege. But with you fellows on the job and the organization's influence, we'll not need for champions of a worthy cause. I never realized your importance before I was privileged to make the trip with you last year. Keep up the good work.—*H. N. Elfenbaum*, Chicago, Illinois.

(*Editor's Note:* At the close of the Maroon Bells-Snowmass Expedition, Colorado, in 1947, the riders came through the town of Marble, which just three days before had suffered a gigantic mud flow.)

Request for Color

SIR: Your forestry magazine is very fine and I enjoy it very much. I don't know how you feel about suggestions and perhaps this one is impossible but I have been wondering if there is any way one color picture could be inserted in the magazine each month. It certainly would be wonderful to see some of your striking black and white pictures in color. —*Anne Hamilton*, Pittsburgh, Pa.

Fungus Wanted

SIR: As a chemist at the University of Illinois, I am making a study of possible useful chemicals which occur in various fungi. The one on which we are now working is an interesting material known as polyporic acid which constitutes as much as forty-three percent of the dry weight of the fruit bodies of *Polyporus rutilans*, or *Polyporus nidulans*, a fungus which grows on dead wood.

My problem is to get enough of the fungus to carry on our studies—and I hope you will publicize our request for samples. I believe the readers of AMERICAN FORESTS are just the people who might come across the fungus during field trips in the woods.

Supplies of the fungus, from a single fruit body up to a few pounds, will be much appreciated. The sender will be reimbursed for any shipping expenses involved.

The fungus, although not common, is to be sought in the fall on dead deciduous wood, mainly hickory, but also poplar, maple, beech, some oaks, and others. It is a "shelf," thick, convex above and below. Specimens are found up to four inches long and three inches wide. The color ranges from pale yellow to flesh color or tawny-copper, and penetrates throughout the fungus. The top surface is smooth. When fresh, it is soft and fleshy, and has an anise-like odor. Dried specimens are also somewhat fragrant.

A good test for the identity of *Polyporus rutilans* is to place a drop of household ammonia on the fungus and note the resulting purple color.—*Robert L. Frank, Department of Chemistry, University of Illinois, Urbana, Illinois.*

For the Parks

SIR: Your editorial "All's Not Well in the National Parks" (July issue) stirred me to the extent that I feel I must write you. Why don't you have the editorial mimeographed and sent out to those interested in forestry and conservation and with a request that they be sent by the individuals to their congressmen?—*Mrs. J. C. Wallace*, Shaker Heights, Ohio.

FOREST FIRE FIGHTERS

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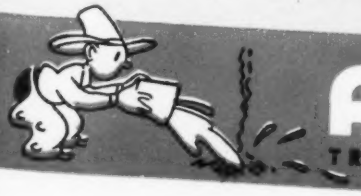
1. **TRACK TYPE TRACTORS** — Four models to choose from — 37.5 drawbar hp. and up. Matched allied equipment — bulldozers, scrapers, front-end shovel, snowplows, winches.
2. **WHEEL TYPE TRACTORS** — Five models with various speeds and horsepower ratings. Power take-off and accessories as desired.
3. **MOTOR GRADERS** — Model A-D for heavy construction and maintenance; model W-Speed Patrol for light grading.
4. **POWER UNITS** — Five sizes, from 24 to 110 maximum brake hp.

Allis-Chalmers 2-cycle Diesel equipped with Angle Dozer moving up to fight raging 2,000-acre swath of fire in Tujunga Canyon, Los Angeles National Forest. — *Los Angeles Times Photo.*

Allis-Chalmers 2-cycle Diesel tractors, like the one illustrated, are doing front line duty fighting forest fires continuously. They start instantly with the press of a button. They climb, turn, back and ram with agility to remind you of a mountain goat. At high altitudes, their power is sustained at an unusually high efficiency.

These characteristics make A-C Diesels the ideal tractors for all types of forestry work. Allis-Chalmers dealers have the full story on the many 2-cycle Diesel advantages.



ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Editorial

The Columbia Flood

Federal foresters, probing into the causes of the disastrous Columbia River floods of the Pacific Northwest in May which caused damage estimated at $200,000,000, took more than forty lives and made 60,000 people homeless, report that mis-use of land was an underlying factor in much of the destruction. While extraordinary weather conditions were the primary cause, the watershed technicians found ample evidence to show that the sudden release of water from melted snows would have been greatly reduced if millions of acres in the watershed area had not been previously robbed of their plant and forest cover.

Forest fires in the past had denuded much of the lands. Heavy logging, grazing, farming, mine or smelter operations and road building, were said to be other causes. Most of the fires had occurred previous to 1935.

Fifteen days after the flood peak, observations from the air showed that unburned timbered areas in the watershed were still blanketed with snow, while nearby burned sections were snowless. Had less of the high elevations been burned, there would have been much less water to flow off the mountains during the critical flood period, the foresters report. Water discharges were measured to be fifty percent higher on severely burned drainages as compared to unburned sections of forest.

Again a flood disaster has pointed a finger to the interrelations of forests, soils and water in mankind's progress. While it would be incorrect to say that perfect land use would have prevented the Columbia River flood, the evidence is clear enough to show that better land use would have greatly lessened the destruction.

Conservation—Boom or Bust?

Within the last ten years the uplift given to forest conservation in this nation has been astounding. Federal and state agencies, with increased funds, are putting more foresters into the woods. Progressive forest industries are getting their lands in better shape and lending their support to programs of management on other holdings. Other industries and private associations are also pitching in. A small but growing number of consulting foresters is providing direct technical service to many owners.

All this is very heartening. It's needed and must be continued in greater intensity to prevent a bankruptcy of America's forest wealth already in the red as far as balanced growth and harvest of sawtimber size trees is concerned.

Because of the nature of tree growth, the real results of these intensified management efforts will not be apparent for some years, although it now appears that for the nation as a whole, the growth of small size trees exceeds that cut.

More than 300 million tree seedlings are being produced in state nurseries for planting this winter and next spring. The production is double that of last year and will be enough to plant close to 300 thousand acres of cutover lands. Even these Herculean efforts will need to be greatly expanded to reforest a twenty million acre goal set by foresters to plant in the next twelve years.

While the picture brightens with these increased forest conservation efforts this is no time to be lulled into the complacency of a job well done. What is being accomplished now has long been put off. There is still a great task ahead. The responsibility for meeting the needs of rebuilding the nation's resources rests with every landowner, industry, government and many others.

Is conservation enjoying an inflationary boom, doomed for a later bust, or is this the real thing? Only time will tell.

Forests in the World Economy

Among the world's raw materials, wood ranks second only to food. Next to agricultural crops, forest crops have contributed most to human progress and security. The world's annual wood harvest is in third place in value, next to cotton and wool, among all commodities entering international trade.

But when it comes to versatility, wood tops all of the world's raw materials, according to a report of a special forestry committee of United Nations Food and Agriculture Organization. An attempted census of the uses of wood once attained a count of 4,500 without even approaching a full and exhaustive classification, the report shows.

For more than two-thirds of the human race, wood is the fuel used for cooking food. Countries like the Netherlands, China, Syria and Palestine have less than an acre of forest land per person. In the Upper Ganges Plain of India, once heavily forested, the privations posed among millions of people by a wood starvation has forced the greater part of the population to burn cattle dung and agricultural refuse for fuel.

In nations with abundant untapped forest resources, improvement of transportation facilities is one answer to getting more wood on the market. The FAO forestry committee also recommends a greatly expanded research program to develop uses for wood wastes and for the vast tonnage of wood fiber now locked up in timber of low commercial importance.

By far the most fundamental means of providing continuous wood supplies has to do with the protection and management of forests — a job that starts right at home in every individual woodlot of this nation. Denmark, with less favorable soil and climate for tree growth than the United States is growing three times the amount of wood an acre. Better management and more complete utilization spell the difference.

"September in the Catskills"—Kabel Art Photos

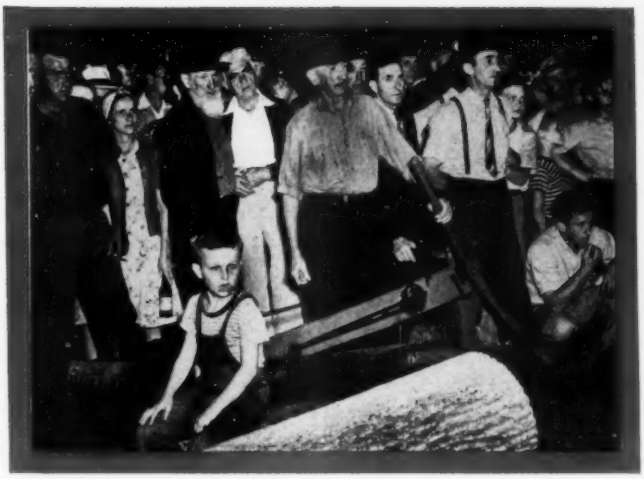
Landowners who work this Pennsylvania countryside are the backbone of the Glatfelter Pulpwood Company (left)

When champion choppers tee-off at a Glatfelter picnic the result is a snowstorm of flying chips

With shirt tail flying, the youngster on the left proves his mettle with the cross cut saw

Photos by Robert Teller

"Bear down, Pop" the crowd shouted to this soloist with a bowsaw



Equipment demonstration—Interest registered here indicates why Glatfelter forestry has plenty of vigor

PULPWOOD PICNIC

By A. G. HALL

Forestry begins at home in the opinion of this firm which has a going year-around program including an annual picnic

WHEN Stella and Fred Campbell stepped from the crowd at the annual pulpwood producers' picnic held by the Glatfelter Pulpwood Company near Spring Grove, Pennsylvania, this summer, they symbolized the whole philosophy behind the Glatfelter forestry program. Here were brother and sister, with ax, saw and spud in hand ready to enter a competition against other local woods workers. Their aged father turned to the judges, "They're my daughter and son, they've been working in the woods with me for the past seven years."

While family groups cheered, saws whipped through the trunks of poplars and the spuds, in the hands of experts, slipped bark from fallen logs. This was the day for family enjoyment of Glatfelter hospitality — families which are the backbone of the wood supply for the pulp and paper mill.

For the company produces only a small amount of pulpwood from its own lands in Pennsylvania. It depends mainly for its Pennsylvania supply upon "truck wood" produced by local farmers and landowners. The mill's future, as has been its past 85 years of operation, is dependent upon how those landowners treat their forests. "Railwood" comes from greater distances and other states, but the locally-produced logs, brought in by truck, constitute at least thirty-five percent of the mill's consumption.

As one drives through south-central Pennsylvania, through the farming country with its scattered woodlands, he can easily perceive that just one major wood-using industry could spell the doom of the trees if its wood-procurement program were not well directed. The efforts of Glatfelter foresters are aimed toward keeping the local land highly productive.

The annual pulpwood picnic is just one event which causes the pulpwood supplier and his family to believe they are a part of the company, as indeed they are. Young and old, from babes in arms to ancient patriarchs of Pennsylvania's "Dutch" heritage, they assemble each year at the woodyard of the paper mill. Guides and technicians show them the processes through which their home-grown pulp stick must go before it emerges as a

Forester D. E. Hess marks timber on state's first Tree Farm

Mr. and Mrs. Clarence Williams, of Fulton County are noted for their well-prepared pulpwood

roll of fine bond or book paper. They see why certain wood is rejected and what happens when a piece of bad wood slips by the inspector to discolor the otherwise snowy whiteness of the whirling pulpmass in the beaters.

Then to the picnic grounds at Glatco Lodge where a huge storage reservoir forms a well-stocked fishing lake. Here beneath the trees, the children play at games and contests, the adults review exhibits of good and poor ranks of pulpwood and guess at their contents, identify leaf and flower specimens and pictures of fish, wildlife tracks and other forest curios. Then comes the picnic lunch—lunch to these folks, but a rather ample dinner for city dwellers.

While the children assemble in the lodge for a motion picture subtly interspersed with reels on forest and wildlife conservation and safety, the adults watch exhibitors of mechanized equipment display the latest techniques of wood harvesting. Men whose palms have long since assumed the contours of saw and ax handles step up to try out a gasoline or electric saw, to wonder at its speed, and to appraise it as an investment for home operations. Others test the grip and balance of bow saws, new axes and weigh the conventional steel wedge in one hand while marveling at the extreme lightness of a magnesium wedge held in the other.

Little knots of woodcutters gather here and there to discuss how such equipment might be used to advantage.

Then come the contests — sawing, chopping, peeling. Judges, chosen from among visiting foresters, time the events with stop watches while the crowd urges its local champions on to greater and greater speeds. Boys and girls—the future woodcutters—pull cross-cut saws, and you can tell that they have been practicing for the event. Prizes are awarded — saws, axes, some cash. Yes, there is a speech or two, but not any oratory. Somewhere along the line, P. H. Glatfelter, president of the company, and P. Koenig, executive vice-president, step up to the loudspeaker and officially but unobtrusively welcome their neighbors.

Such picnics have been held since 1936, with the exception of the war years. Their social success is indicated by the ever-growing attendance. Over 700 persons participated in the 1948 event. The first outing in 1936 drew a crowd of only 50. Newcomers to the picnic learn what part they play in the vast business of papermaking, they become acquainted with company officials, with members of the forestry staff. The old-timers renew such acquaintances and, together new and old, they have an opportunity to discuss mutual problems in pulpwood production, to seek out the advice of foresters and wood buyers, and to be brought up to date on methods.

President P. H. Glatfelter says hello to his neighbors

The picnic, however, is just one project in a plan to bring to the southern Pennsylvania woodland owner a realization of the importance of his trees in the local and national economy.

D. E. Hess, assistant manager and forest engineer for the pulpwood company, has a year-round service program in operation. Hess is a technically trained forester, as is his immediate superior, W. G. Schwab, manager of the pulpwood company. Both have had the bulk of their working experience in the region from which the company receives its wood supplies. Consequently, they know well the condition of eastern woodlands, the economic problems affecting the landowners and what information and on-the-ground assistance the landowners really need.

A striking parallel is found between the Glatfelter forestry program and that of national conservation agencies. The chief difference between the two is that the Glatfelter program, being local in approach and designed for a smaller and vitally concerned area, is able to deal with problems at their roots.

Every conceivable means available to the company is utilized to make the landowner and businessman, the wood user and the person dependent, however indirectly, on forests, aware of their importance and to instill in them a desire to support and carry out worthwhile conservation measures.

For those who can and will read,

the company has published a number of bulletins and pamphlets designed to attract attention and to carry a conservation message. Typical titles are "Forestry and Paper," "Paper and Its Performance," "A Short Course in Paper Making," "Paper Making Takes All These" and "Forest Bank." These are available in quantity to vocational agriculture schools, forestry schools, and the other educational groups. Pulpwood producers also receive copies.

Two bi-monthly periodicals likewise help to keep both employees and cooperators up to date on the latest developments in forestry and manufacturing techniques. One is "The Barker," a house organ for employees and for interested pulpwood producers. The other is "Pulpwood Chats," designed especially for the pulpwood producers, but distributed also to schools, county agents and other state and federal conservation workers in the area served by the mill.

In distributing its own material, the company frequently includes publications from other conservation agencies. This material is well selected with a view to its being useful to the recipients and with a view to stimulating their growing interest in forest conservation and wise use.

Two motion picture films in color, "Papermaking" and "Harvesting Pulpwood," have wide use in schools, service clubs and other organizations. Each of these carries a forestry message which is supplemented by talks and discussions led by the company's forest engineer.

This phase of the educational program is a "softening-up" process to arouse interest in forestry in general —interest which the company expects and actually finds translated into better citizens who are careful with fire, who support progressive legislation, who serve as evangelists among their friends and neighbors.

An on-the-ground action phase is carried out by the foresters, who assist the woodland owners in developing plans for the management of hundreds of small forests upon which

This boy just won a sawing contest and he's proud of it

the company depends. This means getting into the woods with the farmers, helping them to mark timber for cutting, giving them planting advice, designing their logging roads, help-

(*Turn to page* 430)

A pulp and paper mill requires wood, water and men. Good farms produce all three which explains why Glatfelter company goes all out for wise land use

W. W. "Doc" Clingan, shown on the job at far left, is a typical farm forester. The accepted forestry authority in New York's Chemung Valley (below) he's a busy man. Just how busy is shown by the calls "Doc" made in one normal day's work

USFS Photos by Leland J. Prater

A Farm Forester At Work

W. W. CLINGAN, or "Doc" as he is known to some 2,758 farmers in New York's Tioga and Chemung counties, is one of approximately 200 farm foresters in the United States who are providing direct service to woodland owners in an effort to bring their properties under sound forestry management.

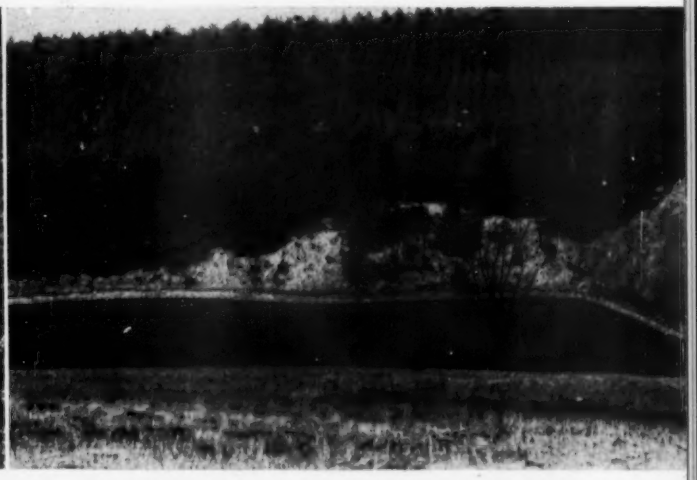
They have an important job—just how important was shown by the Forest Resource Appraisal of The American Forestry Association. More than four million owners of small woodlands, most of them farmers, control fifty-seven percent of the nation's commercial forest land, the report showed. It also showed that not more than ten percent of this land is being operated on a sound forestry basis which means that Farm Forester Clingan and others like him have come to grips with one of forestry's major problems today.

In his office at Waverly, New York, "Doc" Clingan has a large operations map of "cases" covering timber sales, thinning operations, marking and other forestry jobs. Each case gets his personal attention and consequently the Clingan automobile is as well known as the mailman's on Tioga and Chemung roads. On an average, farm foresters handle 100 cases a year although it would be difficult to measure the worthwhile missionary work they accomplish by merely dropping a word of advice here and a suggestion there. Once described as "comfortable as an old shoe" by a Chemung county farmer, Forester Clingan manages to combine the astute business acumen of a banker with the persistence of an insurance agent to accomplish favorable results. Actually, he is forestry agent, adviser and teacher to farmers who have learned to rely on him in tackling woodlot problems.

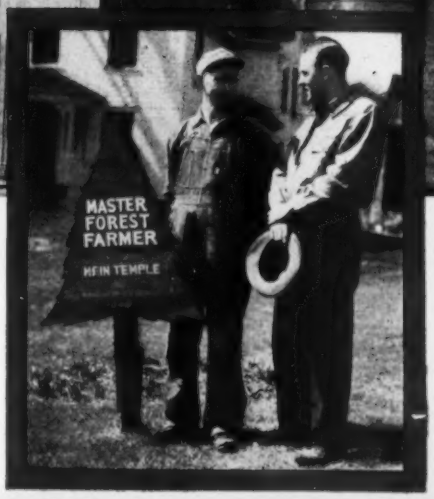
Farm Forester Clingan calls on Karl Arvella, a Finlander, who has developed a good fuelwood business on his 40-acre hardwood pole stand near Van Etten, New York

Marked by Farm Forester Clingan, sale of 977 trees from this crowded woodlot netted Clarence Lounsberry $4,050. Another cut may be made in twelve or thirteen years

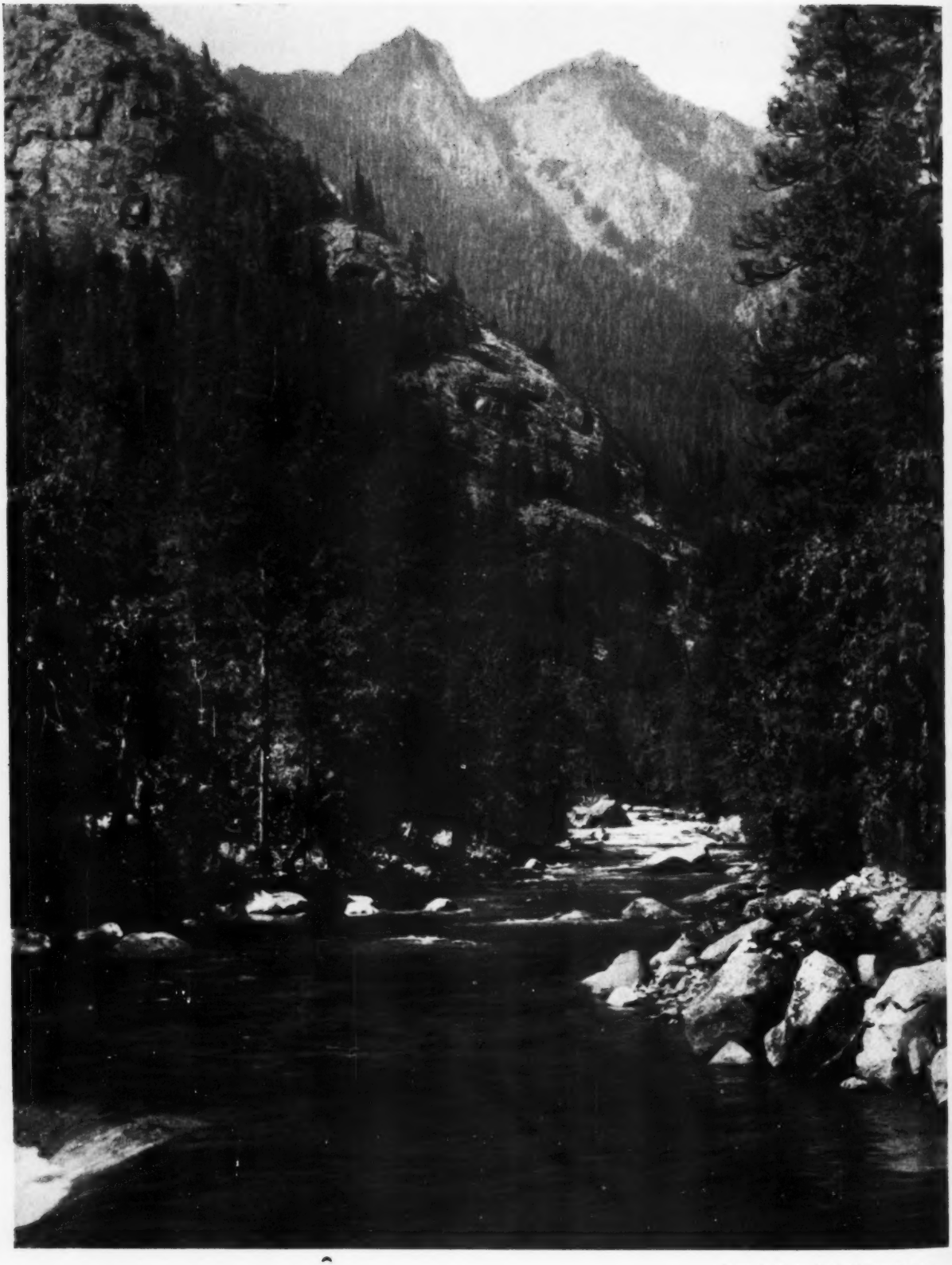
On the advice of Farm Forester Clingan, Carl Warren set a fifteen inch minimum stump diameter limit in selling white ash on his lot for handle stock. Profit: $1,660



Trees were so crowded on the Waverly watershed that slips and slides were common. The water board called in Farm Forester Clingan who thinned out the pine plantation



The $10,000 barn at the right was built at half the cost by Dairyman Hein Temple thanks to hemlock and beech from his woodlot (left). Clingan, who directed the project, is shown at right with Master Forest Farmer Temple



G. E. Griffith—U. S. Forest Service

A clear, cold stream on a healthy watershed—Icicle Creek in Wenatchee National Forest in Washington. Unfortunately, streams like this are becoming less common

OUR GROWING WATER PROBLEM

The cure for gravely serious watershed abuses is better land management. And that will come only when water users are sufficiently aroused to demand it

By EDWARD N. MUNNS

Part II

Removal of the protection forests and alteration of the ecology of the settled and wildland areas have had adverse effects on wildlife as well as on human society.

Floods are particularly damaging to fish and animals. Stream beds are subject to severe scouring which destroys large quantities of fish and their supporting flora and fauna. The pools, spawning beds, and protective bank cover are so altered that they become unsuitable as habitats. The sudden raising of water levels leaves fish stranded in temporary pools and often washes large quantities of highly toxic materials into streams and lakes.

Sedimentation is equally injurious. The bottoms of streams and lakes are covered with a blanket of material which kills the fauna (insects, etc.) and greatly reduces the available food, cover, and spawning grounds. Silt carried by streams in suspension shuts out the light, thereby reducing plant growth and hence food for fish. The darkened water also increases temperatures, preventing the hatching of eggs or rendering the water uninhabitable for some species of fish. Discharge of much industrial waste and sewage in water courses is, of course, deleterious if not fatal to the fish population.

The toll of fur bearers, water fowl and game from floods, erosion and sedimentation is staggering. Floods not only drown large numbers of animals but ruin breeding grounds or drastically alter the habitat. When stream banks are covered with sterile deposits of mud and sand the available food supply and cover are depleted.

All these conditions have been responsible for the marked decline in the take of some species of commercial and sport fish (hence requiring large-scale restocking of streams) as well as of ducks, shore birds, and other targets of the huntsman's eye.

The building of numerous dams and other stream obstructions has seriously hurt our salmon supply by preventing the fish from reaching their spawning grounds — and sometimes the spawning grounds have been ruined by sedimentation and debris. Familiar to East and West Coast residents is the pollution of our bays and inland streams flowing into them that has robbed us of choice oyster beds, decimated the supply of other shellfish and generally made seafood an expensive item on the menu.

The cost to the nation of the misuse or abuse of the plant cover on our watersheds is impossible to calculate with any precision. It is estimated by the U. S. Forest Service that direct flood damages from this cause alone are running at a rate of $300,000,000 annually. The additional costs arising from water shortages, such as poor crops or crop failures, loss of hydroelectric power, inconveniences to industry, business, and domestic water users from rationed supplies, cannot be translated into dollars.

Whichever way we look at our water problems, the conclusion is clear that we cannot afford the consequences of watershed denudation which threatens to stifle the economic and social development of the nation and undermine the resource base on which the national welfare ultimately rests.

Scientists and land-use experts do not have all the facts they need and cannot give answers to every question that arises, but enough information about the behavior of watersheds is available to suggest methods and procedures of prevention and cure. It is clear that a well-balanced program must have several objectives:

First, the soil and cover of forests and other watershed lands in good condition must be protected and those in poor condition restored. Second, in areas plagued by water shortages it is desirable to increase the amount of water taken into the soil and reduce the various evaporation losses. Where flood hazards are high, ways must be found to prevent heavy surface runoff and to reduce damaging erosion and sedimentation. Third, the protection forests must be put in shape to produce continuous crops — timber, forage, water, and other products.

The job of restoring our debilitated watersheds was begun only in relatively recent years. Many engineering projects have been completed or are in the developmental stage, from gigantic Hoover and McNary dams to smaller ones whose names are known only locally, to store and hold water from mountain or upland sources in huge reservoirs for the control of floods and conversion to productive use. But in the final analysis the condition of the vegetative cover is the key factor in water production, erosion prevention, flood damage reduction, and lessening of sedimentation in the streams.

Maintenance of a vegetative cover will not halt normal erosion, nor reduce the sediment load of streams, but plants and litter can prevent an increase in erosion and sediment production. The restoration of a healthy cover stops the waste of soil, extends the life of reservoirs and checks or prevents the loss of water.

What are some of the physical measures necessary to achieve these aims?

One of the major needs is an extension and intensification of fire control. Too many watershed forests

(*Turn to page* 422)

THE AUTHOR, internationally known for his research in watershed protection and development, is chief, Division of Forest Influences, U. S. Forest Service.

Golden Anniversary

Black Hills spruce border the banks of many swift streams in the national forest area

The fragile loveliness of Bridal Veil Falls in Spearfish Canyon is well known to visitors

THERE is a sort of magic about the Black Hills of South Dakota and Wyoming. It isn't black magic, but green. It lies in the forests of pine and other verdure on the slopes. These great hills, rising massively out of the sweep of tremendous plains do appear black in contrast with the bleached prairies. They are dark with deep green tones, with lacy shadows under orange-boled pines, oak, aspen and other broadleaves. Early travelers saw them across the shimmering white-hot sunshine that floods the prairies, gave them the name, and it has persisted.

The national forest lands of the Black Hills have passed the half century mark as part of the great system of publicly owned forests. This is a golden anniversary. And all around these forests is wrapped a shining cloak of romance, adventure, history and achievement. Some of the threads of this cloak are old, some new, all are bright and interesting.

Not so long ago, just a little over sixty million years in fact, schools of fish cruised above the spot where this outpost mountain range now rears high. A great arm of the oceans spread over this land that is now a part of America. To the westward, the earth began to bulge and gigantic labor began. The Rocky Mountains were being born. As they emerged, the great, plated floor of the old ocean was lifted and the sea waters retreated to the Gulf of Mexico.

As the hot masses of interior stone squirted through cracks in the planet crust, a great, transverse wrinkle formed, extending eastward from the base of the Bighorns across what is now Wyoming. At the tip of that bulge, mostly just east of the Wyoming-South Dakota boundary, a great dome of igneous material formed, thrust, and burst through shales, clays and other sedimentary formations. The heart-rock of the earth piled toward the heavens. The Black Hills, then still hot with the effort of breaking up through tons of sedimentary rock, stood treeless in the vast prairies. But the home for forests had been prepared.

Some may consider the Black Hills, with their necklace of

There is a sort of magic about the Black Hills which have now passed the half century mark as a part of the national forests. It lies in the forests of pine and their shining cloak of history

By ARTHUR H. CARHART

Forested slopes in the Black Hills are seen at their best from Harney Peak lookout

Black Hills outpost—Devil's Tower in Wyoming, northwest of the national forest

shattered old ocean floor, a separate range of mountains. But by the time of their primary emergence and by that connecting wrinkle that lifted the surface but never fully broke through, they would appear to be an out-flung island of "The Great Stony Mountains"—our Rockies.

The high pinnacles of the hills caught and held clouds cruising across the plains. The bodies of the cloud giants were lifted into cooler air strata by updrafts rising from the hills. As the clouds shivered in the chill air, they shook out rain. They still do. The annual precipitation within the Black Hills is double that of adjacent lowlands. This is why forests drape like verdant shawls across the shoulders of ridges and peaks once bare while surrounding lands are treeless.

Centuries ago the tree armies crept in to claim homes in the hills. Some came up the river bottoms to the eastward; others from the north. The pines probably came from the west along that isthmus of high land and broken terrain that is the underground structural connection with the Bighorns. When the Verendrye brothers, first white explorers, reached the Black Hills, they found "a wilderness of pine covered mountains, hills, canyons, gulches and ravines, and interspersed with fertile valleys and natural parks laced with clear streams—a verdant oasis in the midst of a barren, undulating prairie."

For years this mountain island in the plains was homeland for Indian tribes. First it was haunted by the Crows. Then the Cheyennes claimed it. Then came the Sioux, spreading into the prairie country as the Ojibways pressed westward with white settlement shoving them away from eastern settlements. The tribes of the Sioux held the Black Hills from 1775 to 1874. Then in 1875 the lure of gold brought reckless, adventuring white men into the hills. And for a time they feverishly dug the ores, cut the timber and helped them-

selves to the goodness of resources within this island of the mountains.

Activities of this era still boiled when the first forest reserves were established in the Black Hills area. It was a period of flux and change even in forest policies and plans. Part of this is illustrated by how forest reserves were created, abandoned, re-reserved, augmented and combined. In this area, where the Black Hills stand, beside the present forests, there have been the Short Pine, Cave Hills, Long Pine, Elclaka, Slim Buttes, Bearlodge, Sundance, Sioux and Fort Mead Wood and Timber reserves. Most of these were welded into the forests that exist today. From the total area that has been in these, we have set aside various monuments and parks. The Wind Cave National Park of 1,920 acres was established in 1903. The Devil's Tower and the Jewel Cave national monuments were formerly forest lands. The famous 60,145 acre state park of South Dakota, was formed by exchanging scattered school sections within the forests for a solid block of scenic mountains. All these have been shaped out of lands that were in the forests.

The main Black Hills forest reserve area was established by President Grover Cleveland on February 22, 1897. Opposition here, as in other parts of the West, caused a special clause to be added to the document which created the forest, preventing operations starting for another whole year. The Black Hills forest became an active actuality in 1898. From then on it began to take a place of accented importance, because of it being both "first" and unique in many activities and problems. And quite a number of these are bits of significant forest history.

The first plan of operation, a pioneer study, was being made here by a trained forester, Edward M. Griffith, before the creation of the U. S. Forest Service. He reported that the fire situation seemed to be "under control" but that the primary need was for organized methods of meeting fire dangers and preventing the wholesale destruction they had caused during the decade and a half preceding. Griffith declared that the second great problem was control of the pine bark beetle, which was then playing havoc with the big yellow pines and has persisted as a foremost enemy of the pine forests.

It was high time to get some control over forest management in the area, for in the five years from 1885 to 1890, lumbering of the "cut-slash-and-burn" type had gone on at a terrific rate. In that period it was estimated that a billion and a half board feet had been cut out of the forests, to serve the needs of the mining operations and to build towns and homes. If that much lumber were available today, it would supply a sufficient quantity to build some 150,000 five room frame dwellings according to modern standards.

With the creation of the U. S. Forest Service, Gifford Pinchot sent Henry S. Graves, then a young and pioneering technical forester to the Black Hills, to make a further study and report. Graves was to move toward high leadership in conservation through his teaching at the Yale School of Forestry and as chief forester.

As the miners had rushed in to dig the gold, others had come to settle on rich lands along the streams where farms were established. Lacking other procedures by which agricultural properties could be acquired, many of these settlers filed on bottomlands under the guise of placer claims. Some filings were legitimate, but many were mere subterfuges; no amount of labor and "assessment work" could bring them to patent as mining properties. The farmers simply did a bit of digging, called it "assessment work" and continued in possession and their farming.

It was the studies made by Griffith, Graves and others, and reports to Pinchot telling of these spurious placer locations which were actually agricultural enterprises, that had great influence on passage of the famous act of June 11th, 1906. This recognized that within the forests there were some units of agricultural land which should be opened to homesteading. In its legitimate application this act opened the way for the establishment of genuine ranches in valleys of the West. In its final stages, it became a racket, by which livestock outfits and others, secured titles to lands that were lived on very little beyond the issuance of patent, and became facilities for bargaining and laying claim to adjacent public grazing privileges.

Among the most noteworthy "firsts" of the Black Hills forests is "Case No. 1"; the first timber sale contract between private parties and the federal government. It was on the Este Creek drainage, made with the Homestake Mining Company, and dated February 28,1898. During the eight years and four months this contract continued, fifteen million board feet of timber and 5,100 cords of wood were cut from 486,000 acres. By 1907 the area was covered by young trees. The contract had required that two large pine trees should be left on each acre to supply seed for reforestation. The average amount of lumber left in these trees was 432 board feet. An estimate made in 1937 showed that the timber then standing on this first timber

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Foresters at work—camp outfit on grazing inspection in Black Hills in 1908

P. O. Kelleter

Nyspix Photo

As is evident, the author (right) enjoyed his vacation on Lake George (above)

NATURE: $80 F. O. B.

The story of an inflation vacation

WHEN a two-week inflation vacation of the adventuresome back-to-the-woods variety can be had for under $100, it's worth relating. Especially if *you* can do it, too.

The vacation is a canoe-camping trip on what aptly is termed America's most beautiful lake — Lake George, New York, whose clear, blue-green waters are embraced by the rugged Adirondacks. The setting rivals the picturebook lakes of Switzerland.

Here, within the vast forest preserve of New York's two-million acre Adirondack Park, the simple treasures of nature were rediscovered by a group of young folk from Washington, D. C., under sponsorship of the Potomac Area of American Youth Hostels and including the writer as leader. The expenses of each individual were $80, including train and bus fares and a two-day trip to historic Fort Ticonderoga on Lake Champlain. Comparably, your costs should be no more.

Ideal most every season for an outdoor camping vacation, Lake George is claimed by natives to be most pleasurable in the fall when turning foliage contrasts strikingly with the evergreens and the crisp air rouses the pioneer spirit to seek out the black bass and small game.

Lake George lies in the northeast corner of New York state. The lake runs about thirty-two miles from Northeast to Southwest and at its northern tip empties into Lake Champlain. Its width ranges up to better than two miles and the whole body of water is almost hemmed in by the mountains. In some places the descent of the pine-covered slopes is precipitous.

By LARRY CHRISTOPHER

Scattered over the surface of the lake are more than a hundred islands of varying size. Most of these are heavily wooded, both deciduous and evergreen, and are state-owned property. It is on some fifty-seven of these islands that free campsites are to be found nestled among the trees and facing on the lake. Supervised by state forest rangers, these campsites are numbered to facilitate assignment and each includes a fireplace, rustic table with benches, and a latrine. Humble facilities indeed, but luxury for city-slicker campers like us who

(*Turn to page* 426)

Chattanoogans, Inc.

Chattanooga, Tennessee—scene of the Sixty-Seventh Annual Meeting of The AFA

CONSERVATION CONFERENCE

Complete Program Announced for AFA Annual Meeting at Chattanooga, Tennessee, October 8, 9, 10 and 11

DAILY motorcade trips to outstanding examples of public and private forestry in the Tennessee Valley, including an overnight journey to Fontana Village and general discussion meetings headed by prominent American conservationists, will be features of the Sixty-Seventh Annual Meeting of The American Forestry Association October 8, 9, 10 and 11 at Chattanooga, Tennessee.

Fourteen of twenty-seven conservationists who have accepted invitations to take part in the four-day conference will give talks at principle motorcade stops — ample insurance that these on-the-ground inspection trips will be both profitable and enjoyable. Other speakers will be heard at general meetings.

Of special interest will be a panel discussion on the subject "How Effective Are Efforts To Reach the Small Landowner?" The fact that the panel participants include specialists from seven representative states in the nation—Pennsylvania, Maryland, Georgia, Massachusetts, Arkansas, Alabama and Wisconsin—should help give a nationwide pattern to a localized discussion of this problem.

Keynote addresses will stress the overall theme of the 1948 Annual Meeting, cooperative land management by federal, state and local governments and private enterprise.

Local arrangements for the conference are in the hands of a special committee of Chattanooga citizens headed by Z. Cartter Patten, Arne C. Fosdal and Charles M. Puckett. The committee is ably assisted by a number of key womens' organizations and other civic groups.

Reservations for the meeting should be made through The American Forestry Association, 919 17th Street, N.W., Washington, D. C. Rates for single rooms at the Patten Hotel are $3.50 up; double rooms $6 up.

MEET THEM AT CHATTANOOGA—

W. S. Rosecrans

W. R. Sizmore

Lloyd Partain

Gordon Clapp

PROGRAM

SIXTY-SEVENTH ANNUAL MEETING OF THE AMERICAN FORESTRY ASSOCIATION

AT CHATTANOOGA, TENNESSEE, OCTOBER 8, 9, 10 and 11, 1948

HEADQUARTERS—THE PATTEN HOTEL

FRIDAY, OCTOBER 8

MORNING SESSION—9:30 A.M. Patten Hotel, W. S. Rosecrans presiding; welcome by the Hon. Jim Nance McCord, Governor of Tennessee

"Applying Research to Our Forests"

I. T. Haig, Director, Southeastern Forest Experiment Station

"The Place of State Forestry in the Nation"

James O. Hazard, State Forester of Tennessee

AFTERNOON—Field Trip 1:00 to 6:00 P.M. from Patten Hotel

Motorcade tour of Point Park to view theater of operations of Confederate and Union armies in 1863. Leader: Charles S. Dunn, park superintendent; Visit to J. A. Case farm woodland management-utilization demonstration in Trenton, Georgia. Speakers: Earl Carter, Williams and Voris Lumber Company; L. C. Adams, Georgia Extension Service; J. A. Case, farmer; A. L. Dyer, timber operator; A. R. Shirley, State Forester of Georgia; and J. M. Stauffer, State Forester of Alabama; Visit to Ashland Farm.

EVENING SESSION—8:00 P.M. Patten Hotel

Panel Discussion—"How Effective Are Efforts to Reach the Small Landowner?"

Lloyd Partain, Pennsylvania, moderator; Joseph F. Kaylor, Maryland; W. M. Oettmeier, Georgia; Harris A. Reynolds, Massachusetts; R. W. Graeber, North Carolina; William R. Sizmore, Alabama; M. N. Taylor, Wisconsin.

SATURDAY, OCTOBER 9

FIELD TRIP—9:00 A.M. to 4:00 P.M. from Patten Hotel

Trip to Chickamauga Dam; lunch at Signal Mountain Park served by Signal Mountain Garden Club. Speaker: Hon. Paul Mathes, former commissioner, Tennessee Conservation Department; Visit to the Horseshoe properties, a 17,000 acre forest management demonstration. Speakers: J. H. Nicholson, president, Tennessee Timber Growers Association; Cartter Patten, landowner; James O. Hazard, State Forester of Tennessee.

EVENING SESSION—Social hour 6:00 P.M. Patten Hotel

Banquet 7:00 P.M.—Stanley F. Horn, editor, *The Southern Lumberman*, toastmaster. Speakers: Gordon Clapp, Chairman of the Board of Directors, The Tennessee Valley Authority; W. S. Rosecrans, President of The American Forestry Association.

SUNDAY, OCTOBER 10

FIELD TRIP—Leave Chattanooga 9:00 A.M. for Fontana Village, North Carolina

Visit to Ocoee Gorge and surrounding Cherokee National Forest. Speaker: W. R. Paddock, Supervisor, Cherokee National Forest; stop at Copper Basin to inspect damage to vegetation by fire, over-cutting and smelter fumes in a 23,000 acre area. Speaker: Charles L. Gouffon, of the TVA Division of Forestry Relations; evening program and campfire entertainment at Fontana Village. James Artman, leader.

MONDAY, OCTOBER 11

MORNING SESSION 9:00 A.M.—Business meeting and reports of committees

Field trip to Fontana Dam; tour of Joyce Kilmer Memorial Forest in Nantahala National Forest.

Afternoon—Adjournment. Return to Chattanooga via Madisonville, Tennessee.

Stanley F. Horn

Z. Cartter Patten

I. T. Haig

James O. Hazard

M. S. Benedict

Utah view from the campus of Brigham Young University at Provo

FORESTS OF UTAH

A HUNDRED years ago, in late July 1847, Brigham Young arrived with his first small band of zealots to the bench country between the mountains and the Great Salt Lake in Utah. It was a forbidding spot; the hard-baked soil broke the first plows that sought to pierce it, but the Mormons lost no time in throwing a dam across the nearby creek to soften the earth for working. Thus began what was then unheard of in the eastern states, periodic flooding of land to make it produce crops. How well they succeeded in making the desert bloom is known to every American school child.

These early Mormon settlers had been picked for strength and their skill in the use of tools for shaping wood and stone and tilling the soil. There were groves of aspens and cottonwoods in the narrow ravines that led back into the mountains, and higher up there were stands of Douglasfir and Engelmann spruce. That the settlers made good use of these limited timber supplies is apparent in the records of building houses and storerooms, fences and irrigation sluices, and, of course, most spectacularly in the story of putting up, with wooden pins and rawhide ropes, a vast and lofty tabernacle capable of seating 9,000 worshipers.

Just where the material for the tabernacle came from it is impossible to say. An authorized (Utah Centennial Commission) publication declares: "Timber from nearby canyons was formed into lattice arches supporting the huge 'turtle back' roof."

By JOHN B. WOODS

Even though there may not be any connection, it is interesting to note that twenty-five or thirty miles back in the mountains from Ogden one may still see the stumps of Douglasfir trees, large even by Pacific Coast standards, which were logged and used between eighty and one hundred years ago.

The guiding genius of that particular operation, and of many other industrial projects in and around Ogden, was David Eccles, one of the earliest of the Utah settlers and a leader among the Mormons. Three generations later his descendants are active in various large enterprises, among these being lumber milling in eastern Oregon.

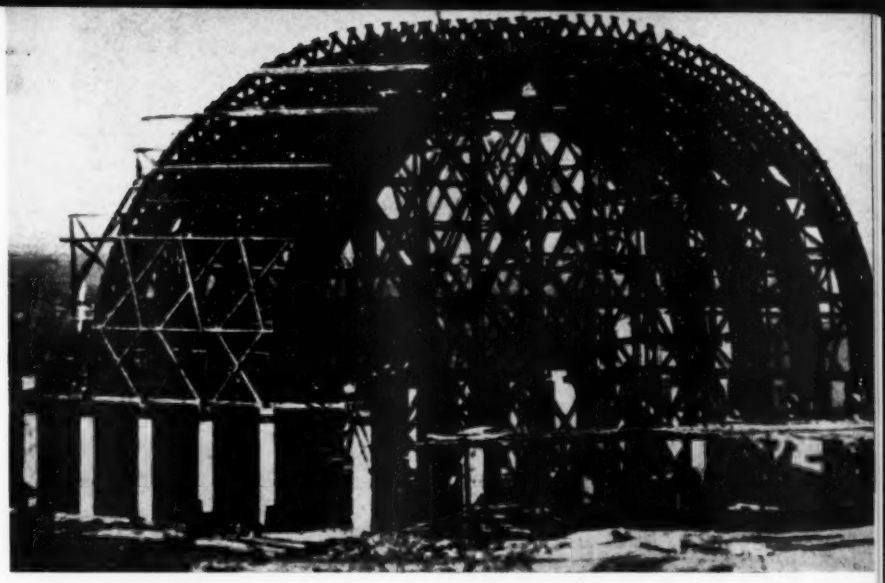
Brigham Young, possibly out of early experience in New York state but more likely because of his own questing mind and the ability to gather about him men of many talents,

hit upon the idea of making paper from aspen or spruce wood that grew in the mountains. So one of the earliest structures built in his great expansion era was a stone paper mill. In various ways it reflected the permanency of this new and virile society. The "Old Mill" is now one of the landmarks of Salt Lake City's environs, although no paper has been made there for many decades.

The region about the Great Salt Lake was a part of Mexico when the Mormons arrived. Actually they were not the first settlers there; a Connecticut Yankee named Miles Goodyear, with his Indian wife, had located about where the city of Ogden now stands, and claimed a large valley area as his own, under an alleged grant from Spain. Whatever the validity of his title, it is reported that the Mormons bought him out for $1,950 in gold.

Goodyear was a trapper for the great Hudson's Bay Company. Other adventurers like him, the "Mountain Men" of western story, had explored this vast territory and paused briefly to trap or trade for beaver pelts. Peter Skene Ogden and Etienne Provot left their names for future Utah cities. Jim Bridger came down to the Great Salt Lake in a canoe, on a dare. The list is long and includes many well known names. Earlier than any of them, however, were the Franciscan monks, Fathers Escalante and Dominguez, who crossed through the great Utah valley in 1776, seeking a short route from Santa Fe to the California coast.

The trading post of Rubedeau and Reed, in what is now Uinta County, is said to have been the first white settlement in Utah. In 1848, by the treaty of Guadaloupe Hidalgo, the region was ceded to the United States, and immediately Brigham Young began working toward civil organization. Two years later Utah became a territory, with Young as its first governor.



Mormons are believed to have hewed down big Douglasfirs in Utah forests to construct the giant roof of the tabernacle at Salt Lake City

All was not smooth sailing for the Latter Day Saints, however, for enemies were busy in Washington, arousing public sentiment in opposition to them. These activities were so effective that in 1857 an army was dispatched to quell a hypothetical "Mormon Rebellion," and if necessary by force, to install a new governor, Alfred Cummings. This threatened invasion of Utah stirred up so much resistance among the embattled farmers that both Col. Albert Sidney Johnston, commanding the army, and the new governor, were happy to achieve a peace with something resembling honor without bloodshed in 1858.

Utah is a very big country, some 360 miles long from north to south and nearly 280 miles wide. Wyoming takes a rectangular bite out of the northeast corner, a matter of possibly 7,700 square miles, running largely to high desert and mountains. Loosely termed the Utah Ranges, a giant escarpment system runs north and south the entire length of the state, separating the watershed of the Colorado River from the southwestern desert of Nevada. Strangely enough, the Uintas, one of the few east-west running mountain ranges of North

(*Turn to page* 428)

Utah scenery is superb. This view is across Big Flat with City Creek Peak in distance

Leland J. Prater

By JACK R. WAGNER

CALIFORNIA WESTERN

ED HENDRICKSON, who has been a retired engineer for fifteen years, opened a box containing old photographs, picture postcards and personal effects. "Here's what the newspaper said about the day we took the first train over," he explained, handing over the clipping. It read:

"Fort Bragg had a great day on Tuesday, December 19, 1911, the greatest day in her history . . . . when the coast of Mendocino County was bound by steel rails, on one of the grandest and most scenic routes in the state of California, to the interior, giving direct communication with the outside world."

That's what some now-forgotten journalist had to say when the first train made its way over the forty-mile California Western Railroad between Fort Bragg on California's rugged north coast, and the picturesque little city of Willits.

With a flourish, the newspaper account continues to describe the trip over the mountains and the arrival in Willits to the accompaniment of blowing whistles and ringing bells plus the enthusiastic tooting of a brass band. And from what we can learn today the celebrations which followed were something to behold. It's quite doubtful if as much noise was made when the Central Pacific met the Union Pacific and joined the entire continent. But before you snicker at the fuss made over the opening of a forty-mile short line, consider for a moment what this project meant to the communities involved.

As late as 1911 Fort Bragg, a small city of about 2,500 residents, was effectively isolated from the rest of the state by a range of mountains on one side and the ocean on the other. In that day mountain roads were better suited to oxen than the feeble automobiles of the time, making the isolation formidable indeed. The best, if not the only method of transportation, was supplied by the little coastal steamers that braved the rocky coast line of northern California.

To Fort Braggers of that day the new railroad meant an end to isolation. Since Willits was on the main line of the Northwestern Pacific, it was now possible to reach San Francisco by rail.

The people of Willits were celebrating also. Perhaps some were rejoicing sympathetically with the delegation from Fort Bragg. No doubt others were merely celebrating something to celebrate, but the serious minded businessman of Willits was celebrating the fact that his city was now a "two railroad town." "Yes, sir," you might have overheard a local booster exclaim, "Willits is an important stop on the Northwestern Pacific and the eastern terminal of the California Western. She'll grow now—you just watch."

Well, Willits did grow — a little. It never did become the "Chicago of the West" as some of the more enthusiastic local boys would have had you believe that day, but it still is an important stop on the Northwestern Pacific and it still is the eastern ter-

This picture of old No. 8 on the main line was taken in 1912. The engine was scrapped about a year ago

Ed Hendrickson Collection

Where logs left the rails at Pudding Creek on the California Western Railroad

J. G. French Collection

This "A" frame bridge may look rickety but it carried many a log train over the creek

minus of the California Western; so you might say it's holding its own.

Since railroads aren't built just to connect two communities, however isolated they might be, let's talk with the old-timers, dig out the yellowing books and records and piece together the story that led up to the day of the first train.

In the year 1852 a ship in the fabulous oriental trade was driven off her course and missing the Golden Gate by some 150 miles wrecked herself on the Mendocino rocks. The crew took to the boats, rowing the entire distance to San Francisco. Once injected into the life stream of that city it didn't take long for the story of the rich cargo of silk and tea to leak out.

Salvage parties left immediately for the scene of the wreck, but whether or not they ever found the ship is not recorded. They did, however, bring back tales of the vast stand of redwoods that covered the north coast for countless miles.

Among those who listened intently to the returning treasure seekers was one Harry Meiggs, local promoter and operator of Meiggs wharf. Stirred by these descriptions, Meiggs bought some mill machinery, loaded it on the ship, *Ontario*, and set out for the forests. Landing in a cove in the vicinity of Big River, which isn't very big as rivers go, Meiggs and his crew set up the mill and began operations as the California Lumber Company.

Impressed with the success of this project, Captain William A. Richardson, a wealthy San Franciscan and the holder of large land grants in Mendocino, built a water-powered mill at Albion, a little south of Meiggs' location, and another at Noyo where the silk ship was reported to have grounded.

The local natives, who were natives indeed, being Indians under the leadership of Chief Noyo, resented this encroachment upon their hunting and fishing grounds and proceeded to make it uncomfortable for the early lumbermen. This they accomplished by means of periodic raids which finally ended in the burning of the mill at Noyo.

In 1857 the United States Army units were sent into the region to quell the Indian uprisings. The troops established headquarters about a mile north of Noyo and they called the settlement Fort Bragg. With the Indian menace out of the way the logging operations began to expand and prosper, while the combined output of the mills kept the little lumber schooners constantly on the run.

It was about 1885 when C. R. Johnson came to the Pacific Coast from Michigan to purchase an interest in the Stewart & Hunter Lumber Company which was then working in the country north of Fort Bragg. Later the company expanded its operations to include the timberland around Fort Bragg and made that city the site of its big mill.

Johnson's company, which later developed into the Union Lumber Company, operated its own steamship line in order to deliver its product to San Francisco and ports south. Employed on the line were skippers with colorful handles such as "Midnight" Olsen; so called because he could put his ship in a Mendocino dog-hole, as the tiny inlets were called, in the blackest midnight.

As the logging operations continued the timber naturally receded, widening the distance from the choppers to the mill, until the problem of transporting the logs from the woods to the mill was no longer a small one. At first huge teams of oxen were used, but finally steel rails proved superior and from then on it was not unusual to see the steam schooners arriving with locomotives, rails and other supplies necessary to build a railroad.

As the redwood giants fell the timber frontier moved farther into the mountains, taking with it the new railroad. At first "end of track" was Hay Shed then South Fork and Ranch. This last stop was the company ranch where beef and hogs were raised, fruits and vegetables grown for the savory cookhouse meals that kept many a lumberjack in the woods.

On the rails went. Next to Redwood Lodge where a shingle mill was starting up, then to Grove, Camp Three and Four. The trees were huge now and when the rail gang came to a stump ten or fifteen feet across they didn't bother to remove it, they just built around it. Finally the little community of Alpine, eighteen miles from Fort Bragg, was reached. Here the road rested long enough for Alpine to become quite a little mountain community — the main attraction being Duffy's Mill which was considered a large operation for that day. Also there was the Alpine Tavern, a

(*Turn to page* 418)

KNOWING YOUR TREES

PACIFIC YEW

***Taxus brevifolia*, Nuttall**

By WARREN D. BRUSH

THE yews are world-renowned trees. The genus *Taxus* contains six species which are widely distributed through the Northern Hemisphere, being found in North America, Europe, northern Africa, western and southern Asia, China and Japan. Three species are native to the United States and adjacent portions of Canada. The yew is closely associated with folklore and history. Because of the excellence of its wood for bows, it has been highly important in archery and its use for this purpose goes back to prehistoric times. The European yew (species *baccata*) has been the most popular of all woods for bows, which was one of the principal weapons used in ancient warfare.

Oliver V. Matthews

A rounded, often unsymmetrical crown and drooping branches, from which hang slender branchlets, are characteristic of Pacific Yew

The yew has long been considered to have a religious significance. It has been looked upon as a sacred tree and its association with churches and burial grounds has given rise to many curious legends. Its somber melancholy appearance is thought to be symbolic of sorrow, sadness and death, while the great age which it attains and its evergreen character are signs of immortality and the resurrection. In Britain the greater number of the oldest yews are to be found in churchyards, but it is the general opinion that the yews were not planted in the churchyards but that the churches were built near the yews which were already of great age. It is claimed that many of these trees are from 1,000 to 2,000 years old.

The Pacific yew occurs in the coast region from the southern tip of Alaska southward through British Columbia, Washington, Oregon and the northern portion of California; also in the Sierra Nevada Mountains of eastern California; and farther inland from the Selkirk Mountains of southeastern British Columbia to the western slopes of the Rockies in Montana and Idaho and to eastern Washington and Oregon. The tree is found, for the most part, near low mountain streams, moist flats and benches, deep ravines and coves in rich, rocky, or gravelly soils. It grows in small groups or singly, scattered sparingly with Douglasfir, grand fir, western redcedar, western larch, lodgepole pine, western white pine and Engelmann spruce. It attains its largest size in the Pacific Coast region. With a usual height of 20 to 40 feet and a diameter of 12 to 15 inches, Pacific yew occasionally attains a height of 60 to 75 feet and a diameter of 18 to 30 inches.

The trunk is straight and conical, but conspicuously ridged and fluted by an apparent infolding of the surface. Except in larger old trees, an open, conical crown extends nearly to the ground and the slender branches stand out straight, often somewhat drooping, while from their sides and extremities very slender branchlets hang down to give a weeping appearance. This habit is strongly marked in trees growing partly or wholly in the open, where the leafy branchlets are much more numerous and dense than those on trees growing in deep shade. The crowns of old trees are usually rounded and often unsymmetrical.

The deep yellow-green leaves of Pacific yew are from one-half to three-fourths of an inch long and one-sixteenth of an inch wide. They are soft to the touch, much paler on their under sides than above, and terminate in a short, bristly point. Attached to the twig by a slender, yellow stem about one-sixteenth of an inch long, they are borne spirally, but by a twist at their base, they stand out horizontally on opposite sides making a flat spray. The leaves produced each year remain green for about five years and sometimes much longer.

The male and female flowers are borne on different trees. The small, yellowish, bud-like, male or pollen-bearing flowers are borne singly and rather abundantly on the under sides of the branches, while the small, green-

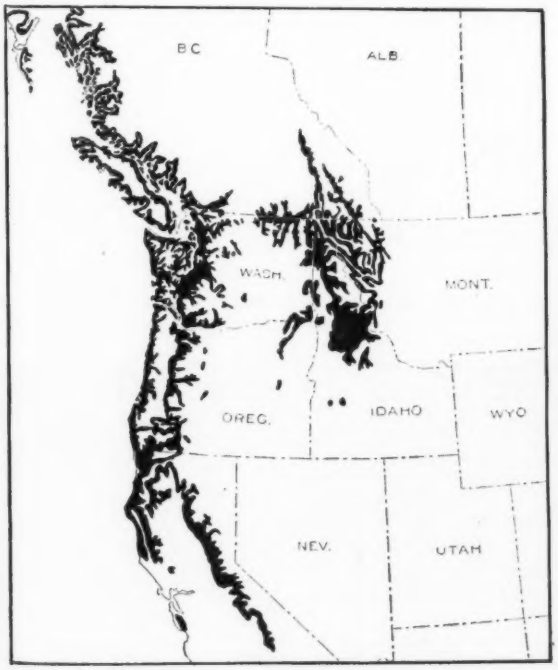
ish female flowers occur similarly but are less numerous. The latter develop into a bright coral-red, berry-like fruit which ripens in September and begins to fall in October. It is often eaten by birds for the sweetish mucilaginous pulp which contains an oblong, egg-shaped seed about a third of an inch long. As the hard shell of the seed is unaffected by digestion, the attractiveness of the fruit to birds serves as an important means of its dissemination, as otherwise it would not be carried far from the mother tree.

The tree has a purplish bark which is conspicuously thin, rarely more than a fourth of an inch thick, and is composed of thin, papery, easily detached scales, beneath which the newer unexposed bark is a clear rose or purple-red. The fine-grained wood is very heavy, hard, and strong in bending and highly decay-resistant. A cubic foot, when thoroughly air dry, weighs about 43 pounds. The heartwood is a clear rose-red, becoming gradually duller with exposure to light. The thin sapwood is light yellow. It is useful mainly for archery bows, canoe paddles and small cabinet work but is of little commercial importance because of its scarcity.

The Pacific yew produces some seed every year with large crops at irregular intervals. Seedlings, which are only occasional and often rare, occur mostly in deep shade. Growth proceeds very slowly in such locations but is very persistent. Trees six inches in diameter are from 75 to 90 years old, while those from 12 to 20 inches in diameter are from 140 to 245 years old. The largest specimens are believed to be at least 350 years old.

Pacific yew is a very desirable tree for ornamental planting because of its dense, dark green foliage and the showy red fruits of the female tree in the autumn. The yew is the darkest of all evergreen trees and the foliage contrasts well with the many lighter shades of green which characterize other trees.

The leaves are deep yellow-green and terminate in a short, bristly point. The coral-red, berry-like fruit ripens in September



The Pacific Yew occurs from the southern tip of Alaska southward through the northern and eastern portions of California

Thin purplish bark, composed of papery, easily-detached scales, rarely is more than a fourth of an inch thick

British Information Se

Notch planting of spruce by British forestry students in North Wales

$20 A WEEK AND A COTTAGE

Five pounds (twenty dollars) a week and a cottage is the pay young British war veterans enrolled in five forester training schools in England can look forward to when they qualify for supervisory appointments in Britain's ambitious reforestation program. Target is five million acres of effective, well-managed woodlands, involving large scale new plantings and the restocking and extension of existing woodlands now sadly depleted.

To implement the plan to make one third of the national timber requirements available from home resources within fifty years, the British Forestry Commission was aware it would require a large force of trained workers to spearhead the program. The result was the establishment of five forestry schools offering a rigorous two-year course and board, lodging and a small allowance to interested young Britons.

The response to the commission's call was immediate. The appeal is in the job, not the salary, for some 270 young veterans, many of whom fought the air battles of Britain in Spitfires and Lancasters or marched with Montgomery through Africa. Years of military service have conditioned these young men to the outdoor life and in forestry they not only work outdoors but have an opportunity to exercise creative effort. So far, there have been five applicants for every vacancy in the new schools.

The course covers every aspect of forest maintenance from fencing and planting to the loading of products. At the start cynics said the veterans would lose interest after a few weeks of hard work—but after six months of training the interest of the students has heightened, not dampened.

Much of the planting program these young forestry students will eventually direct will take place on mountainside and moorland, on land considered unsuitable for economic agricultural use, and in some cases including hill-sheep country.

Prewar holidays on hill farms sold D. R. Davies on forestry

Student E. P. Brewer wanted the outdoor life and time to fish

After Burma, R. S. Lewis quit his bank job, became a forester

FIGHT FOREST FIRES *Before they start*

When forests are interlaced with fire lanes, fire-fighting crews hold a great advantage. Fires can be more easily contained and controlled.

To cut through the forests and build these fire-fighting aids, International Diesel crawler tractors can't be beat. Even on the hillside they cut and ride the trails required . . . for their excellent balance plus geared-to-the-ground power assure stability and positive traction regardless of terrain conditions.

Fight forest fires *before* they start. Your International Industrial Power Distributor can supply the tractors, power units and equipment you need.

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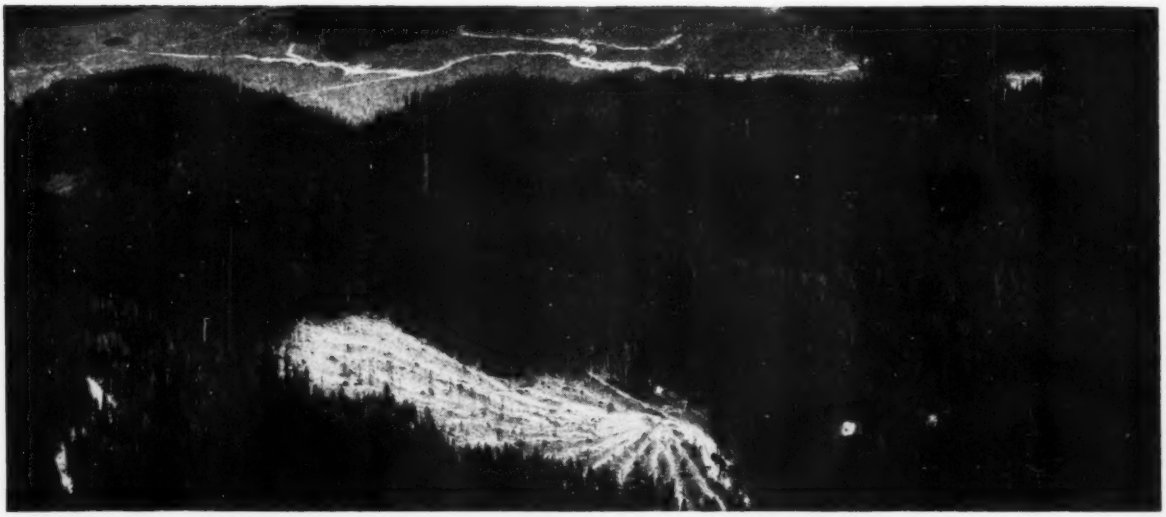
Trees for tomorrow...

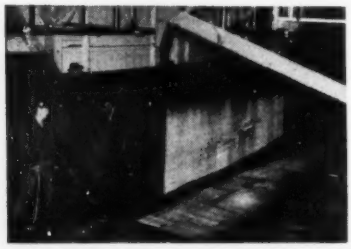
THROUGH
PROGRESSIVE FOREST OPERATIONS



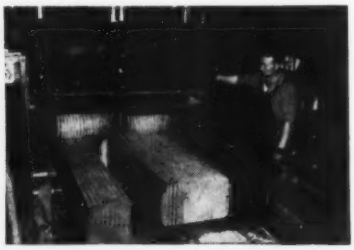
A BOUNTIFUL CROP of trees for tomorrow is seen in this panoramic picture of a Weyerhaeuser forest in the Pacific Northwest. Notice how the loggers have worked only selected areas. As a part of prudent harvesting, generous seedblock areas will be left for later cutting.

PRELOGGING creates scenes like this . . . small trees removed to avoid damage before the larger ones are harvested.

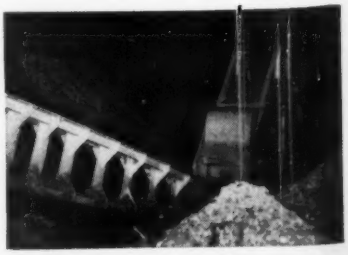
MECHANIZED LOGGING, with swift, agile "cats", gets the logs out of the forest without damage to timber left standing.



SKILLED SAWYERS in Weyerhaeuser mills have the best mechanical equipment modern engineering can produce. This is a headrig . . . a 10-foot single cut band saw.



ACCURATE SIZES mean less waste in the final processing and use of precious lumber. Gang saws, using 23 to 39 blades, cut big cants with truly amazing precision.



SAVING THE CHIPS is a highly important job. Here, an ingenious special machine developed in a Weyerhaeuser mill handles "hogged" fuel for the mill's power plant.

Shelter for today!

GREATER VALUES WITH THE WEYERHAEUSER 4-SQUARE BUILDING SERVICES

AS A GROWER of trees and a processor of forest products, Weyerhaeuser knows that years-ahead planning is good business and is especially necessary in the forest industry. Throughout the years Weyerhaeuser's manufacturing and forestry techniques have been constantly changed, improved and modernized. The goal is to increase the long-time forest yield, to get more usable products from every tree, and to balance lumber production with timber supply.

Good forest management as practiced by Weyerhaeuser has three objectives: better growth, better protection, and better harvesting. On managed tree farms, timber regrowth is assured by the retention of blocks of seed trees in the Douglas fir forests and by selective logging in the Ponderosa pine forests. In protecting these forests every practical method known to science is used to fight fires, insects, and disease. In harvesting and processing, real progress has been made in securing more and better lumber from every log.

A GOLD MINE of ideas, plans, and *sales* . . . that's what lumber dealers and contractors call the Weyerhaeuser Building Services and the frequent, timely, practical promotional materials which go along with them.

In lumber marketing, Weyerhaeuser was among the first to see and meet the need for more efficient, more economical use of lumber in construction. To this end, two valuable building Services were developed—the Weyerhaeuser 4-Square Home Building Service and the Weyerhaeuser 4-Square Farm Building Service.

Through these Building Services, the retail lumber dealer delivers to America substantially greater values in domestic construction. These Services feature a wide variety of homes created by prominent architects—and farm buildings designed by specialists in farm structures. All buildings in both Services are engineered by Weyerhaeuser to achieve sound, durable construction with economy.

By looking ahead, planning ahead, and working ahead, Weyerhaeuser is helping to assure a continuous flow of fine timber products that will efficiently serve the needs of this and future generations.

WEYERHAEUSER 4-SQUARE
LUMBER AND SERVICES

NEWS IN REVIEW

THREE key staff members of the U.S. Forest Service, all internationally known, announced their retirement last month. They are Arthur Koehler, authority on wood structure and identification who will retire as chief of the division of silviculture relations, U. S. Forest Products Laboratory, Madison, Wisconsin; William Norwood Sparhawk, forest economist, an authority on the world's for est resources; and W. Karl Loughborough, of the Forest Products Laboratory staff, noted for his research in kiln drying and problems related to the physics of wood seasoning. Koehler, it will be recalled, is noted for the sensational testimony on wood identification he gave in the famous Lindbergh kidnapping case.

• • • •

Everybody remembers those arithmetic problems that started out "If John had two apples and Mary had six apples, etc." Well, John and Mary finally have some competition. The U. S. Forest Service has produced its own book of arithmetic problems and they deal with tree planting, forest fires, wood utilization, flood control and erosion. Title of the book is "Ranger 'Rithmetic" and the problems are for children at the sixth grade level . . . in fact the problems were submitted by American school children. C. W. Mattison and George Vitas culled the best problems out of the lot and prepared the booklet. Copies are available through The American Forestry Association and through regional offices of the U. S. Forest Service.

• • • •

So far as is known, June of this year marked the first time that a forest was moved from one country to another by air transport. The job was performed by a Sandinavian airline that transported 65,000 two-year-old fir and pine tree plants from Tromsë, in northern Norway, to Reykjavik in Iceland. Although barren of forests for many years, geologists have discovered that thousands of years ago Iceland had very valuable woodlands which were gradually destroyed. Experiments are now being carried out for the recultivation of these forests and the 65,000 plants from Norway should have every possibility of settling in the cold Icelandic soil and thus forming a basis for new forests.

• • • •

William G. Edwards, who has served for thirty-four years on the faculty of the Pennsylvania State College, has retired with the rank of professor emeritus of lumbering. He will accept a position as consultant for several lumbering firms. In World War II Professor Edwards served on the pulpwood division of the War Production Board and as a coordinator with the Resettlement Administration.

Wisconsin school children have voted to name the sugar maple as the state's official tree. Wakelin McNeel, 4H Club leader, University of Wisconsin, headed the youth committee of the State Centennial which sponsored the movement to name a state tree. City and county school superintendents distributed the ballots. The sugar maple was not without competition. A total vote of 279,847 included 87,253 for sugar maple, 71,310 for white pine, 41,896 for birch and 37,431 for white elm.

• • • •

A sharp increase in forest fires—ninety percent of them man-caused—in the United States during 1947 as compared with 1946 is cited by the U. S. Forest Service as showing the need for intensified popular cooperation in the 1948 forest fire prevention campaign. There were 200,799 forest fires on all forest land in 1947 as compared with 172,278 the previous year. Damage was $55,207,646 in 1947 as against $32,694,113 the year before. Contributing heavily to the 1947 damage was the $12,558,075 forest fire toll taken by the Maine fires last October.

• • • •

The Association of State Foresters announces that its 1948 annual meeting will be held at Blaney Park, Michigan, in the Upper Peninsula, September 27, 28, and 29. This year the program has been so planned that a day's field trip will intervene between two days of indoor conferences. Speakers will include S. L. Frost, executive director of The American Forestry Association.

William Norwood Sparhawk

William G. Edwards

Arthur Koehler

1878 - 1948

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Austin-Western, builder of the world's first Road Grader, in 1878, is proud to present "The Power Grader That Has Everything." Everything, including exclusive All-Wheel Drive, All-Wheel Steer, Controlled Traction, and Precision Sideshift, PLUS High-Lift Blade, Extreme Blade Reach, and Completely Reversible Blade, and a full line of time- and money-saving attachments.

The "99-H" pays maximum dividends day in and day out, year in and year out. No other machine will do *so many* highway construction and maintenance jobs *so well.* Your nearby Austin-Western distributor will be glad to tell you the whole story.

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Only advanced optical design and precision manufacture can result in the brilliant sharply-defined *close-up* view you want in a binocular. That's what you get in a binocular made by Bausch & Lomb, world's outstanding manufacturer of scientific optical instruments. You also get light weight and easy balance in the hand—*it's a joy to use.* Write for 32-page booklet that tells what you should know about "Binoculars—and how to choose them." Bausch & Lomb Optical Co., 275-V Lomb Park, Rochester 2, New York.

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BILL STERN, *NBC Sports Editor, says: "I find my B&L Binocular unsurpassed for its brilliant view and easy handling. It is my constant companion, and is indispensable for accurate reporting of all sports events."*

Bill Stern

Bequests to
THE AMERICAN FORESTRY ASSOCIATION

There are many members and friends of the Association who find it impractical to contribute to its educational activities during their lifetime. Gifts in the form of a bequest are welcomed. Officers of the Association will gladly consult at any time with those who wish to know more about designating gifts for educational work in forest conservation.

Following is a paragraph suitable for incorporation in wills:

"I hereby give, devise and bequeath _____ to The American Forestry Association, Washington, D. C., a non-profit District of Columbia corporation, or its successor, or successors, for the purpose of promoting the corporate activities of said Association."

California Western

(*From page* 409)

hostelry which attracted many tourists to the area. There was a stage connection from Willits which brought visitors into the tavern and also any passengers who wanted to transfer to the railroad at Alpine for the trip into Fort Bragg. These early stages ran through Sherwood Valley into Willits and were operated by Leonard Barnard, who later became a banker and leading citizen of Fort Bragg.

The trip in by stage was something of an experience, especially when horseless carriages made the run. It was not at all unusual to see the passengers out on the road lending a shoulder to the wheel. And even when the auto did operate under its own power the going wasn't necessarily smooth. If the traveler to Fort Bragg by this route was looking forward to leaving the lurching auto at Alpine for the luxury of rail travel, he was doomed to disappointment because in place of the red plush seats he might have expected, he found himself occupying one of the wooden benches built on a flat car and the rest of the journey was behind a creaking log train.

In the years that followed, the railroad was extended to Camps Six, Seven and North Spur. The Alpine outfit moved up to the new terminal, leaving the little community without visible means of support. Then a forest fire wrote complete finale by destroying the hotel and the few remaining buildings. Today all that remains of Alpine is the little railway station with a sign that records the name of a once busy town.

The tracks next ran through the timber holdings of the Irvine Muir Lumber Company, stopping only long enough to build a station which they named Irmulco, using the first letters from each word in the company's title. On they went, passing or establishing new communities on their route. At Soda Springs a new stage connection was made. This time the ride from Willits to the railroad was much shorter although just as rough.

The railroad which started out to follow the loggers found itself so close to the summit of the mountains that the company began to consider the feasibility of building down the other side and into Willits. The surveyors and engineers reported that most of the bridges and trestles were behind them and with the exception of two tunnels the rest of the road would be comparatively simple. So, the little railroad that started out with

nothing particular in mind ended up at Willits in 1911.

Regarding the first train the newspaper article states: "It was a quarter past nine o'clock on the morning of December 19, 1911, when Superintendent J. C. French, of the California Western Railroad and Navigation Company, opened the throttle of locomotive No. 5, with three cars attached, ably assisted by Ed Hendrickson (engineer) and Conductor Fred Hanson, pulled out of Fort Bragg depot, with a little less than one hundred and fifty people, to greet the people of Willits with the first train (complimentary excursion) passing over the road to Willits. It was a jolly crowd, all bent on a good time, which they had."

Mr. French, who was then superintendent of the road, handled the throttle most of the way over and back. According to his daughter, Miss Vera French, now living in Santa Clara, California, the road was not completely ballasted at the time of the first train and French didn't feel that such great responsibility should rest on any employe. Miss French says that she well recalls how her father went right to bed with a sick headache after the return trip, thereby missing the Fort Bragg celebration at the Hotel Windsor.

Because of the unfinished condition of the roadbed and a tunnel fire that burned for months the railroad didn't officially begin service until July 4, 1912.

Today a ride on the California Western is as exciting and picturesque as it was on the day it opened. True, most of the passenger and express traffic is now carried by "skunks" (motor cars) but the ride through the redwoods and along the Noyo River is still one of thrills.

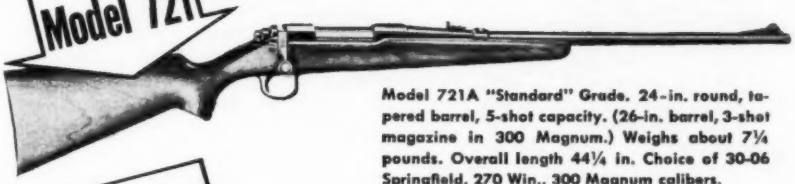
When the road opened it listed two tunnels and 115 bridges in forty miles. Today the two tunnels remain, but the engineering department has pared down the number of bridges and trestles to forty-four. Nine of the remaining bridges are the old A frame trusses, but these are being replaced by more modern construction.

A ride from Willits to Fort Bragg graphically demonstrates how the mountain residents depend on the friendly little railway. Here it's an everyday occurrence to see a rolled newspaper flung from a speeding cab to the pathway of some isolated subscriber. As for stops between terminals, they might be a Boy Scout camp or a fisherman's tent—it doesn't really matter. If there's a quart of milk to be delivered or a service to be rendered then that's reason enough.

PRESENTING TWO

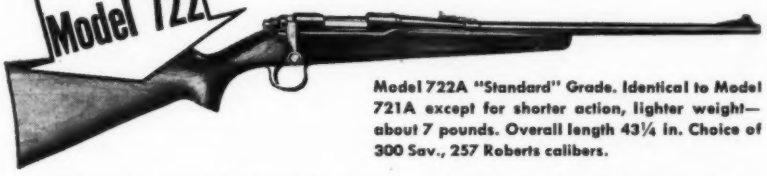
NEW REMINGTON BIG GAME RIFLES

Model 721



Model 721A "Standard" Grade. 24-in. round, tapered barrel, 5-shot capacity. (26-in. barrel, 3-shot magazine in 300 Magnum.) Weighs about 7¼ pounds. Overall length 44¼ in. Choice of 30-06 Springfield, 270 Win., 300 Magnum calibers.

Model 722



Model 722A "Standard" Grade. Identical to Model 721A except for shorter action, lighter weight—about 7 pounds. Overall length 43¼ in. Choice of 300 Sav., 257 Roberts calibers.

Here at last—two light-weight, powerful, low-priced big game rifles.

You're bound to like the clean, graceful lines. You'll find the light weight (about 7 lbs.) pays off on a long day's hunt! You'll be pleased with the perfect balance and superb accuracy. You'll be amazed at the entirely new design of the encased bolt head, which helps give these rifles the strongest action ever built in a bolt-action rifle. Most of all, you'll appreciate the low price! Check with your dealer. See one of these powerful rifles. You'll find it a big game hunter's dream come true!

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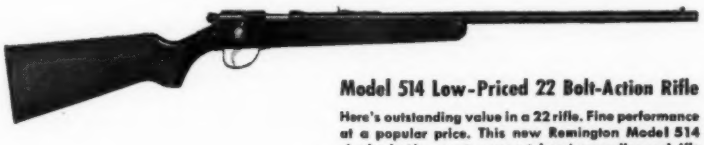

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Golden Anniversary

(*From page* 402)

sale showed an average total of 2,611 board feet an acre—an increase of 442 percent.

Many other bits of history highlight earlier days of the Black Hills forest. The first recorded forest fire for which man was partly responsible occurred on May 1, 1897. Dr. S. F. McGahey, curator of the Adams Memorial Museum at Deadwood, South Dakota, was camped with a party of eight men on Boulder Canyon road. They were cooking breakfast over a well-behaved campfire. Then a small whirlwind rushed into camp, picked up the fire, threw it into the woods, and although the men fought it, the fire got out of control.

Fires were numerous and unchallenged in the earlier days. But on the morning of August 24, 1899, with the control of forest fires just beginning to shape, the famous Iron Creek fire began to blaze. Before it ended it had burned approximately 20,000 acres of timber and brush land. Men fought it from August 24th to September 15th, when a 24-hour rain quenched the last embers.

Fire has cursed the Black Hills in later years. In 1931, a thirty-five-year-old man set the forest on fire, deliberately. Flames swept 21,600 acres. The incendiary confessed, implicated six confederates that never were traced, and then committed suicide in his cell at Lead.

Lightning striking on July 8. 1939, started what is known as the "McVey fire" — the most disastrous in recorded Black Hills history. It burned a total of 21,857 acres, and on July 11, when it was at its peak, it spread at the rate of 2.900 acres an hour. The loss of tangible wealth during the four days of fire totaled $276,073. A maximum crew of 1,755 men fought the blaze along 47 miles of fire line. For three years after that fire damaging floods poured out of the denuded area.

Besides the fires, the Black Hills forests have been battle grounds against other enemy forces. Griffiths in the first study and report stated that at that time some 225 million board feet of pines had been killed by the bark beetle. The fight against this destructive insect has ebbed and flowed over the years since that time.

In 1918, the "Big Freeze" hit. It became so cold bark split off and the trees died. On July 25, 1921, a hail storm hit over a strip of forest five miles long, one mile wide. Pines that stood two feet through at the base, seventy feet tall, were peeled down to naked spars standing on their own stumps. A wind hit another section; over one million board feet of timber was blown down in that fierce assault of rushing air.

From that day when the earth wrinkled, and the land upthrust to form the turreted hills where stands Harney Peak, the highest point east of the main Rockies — 7,240 feet above sea level—the Black Hills have been an area of events in high motion. This has been an area where many types of struggles have seethed, and destiny determined.

But today, under advanced forest management, the hills are a place of serene and inviting vistas. The watersheds, protected by the growing forests, supply sixty percent of the water for domestic and industrial consumption to towns of 2,500 or more population that required a total of 13.900,000 gallons a day; a population of 42,100 is dependent on this water. The actual forest area within the Black Hills, totaling 1,979,000 acres, contains 3,586,000,000 feet of merchantable timber. The total current annual growth, including sawtimber, amounts to seventy-two million board feet. Of this, nearly a third is sawtimber. The annual cut totals thirty-five million board feet, which, when sawn and ready for market, represents a value of $350,000 at current prices. There is grazing for about 25,000 cattle and 20,000 sheep on the forests; a use almost wholly allotted to local ranchers operating places of moderate size.

No glaciers have gouged the high pinnacles of the Black Hills. There are not the ragged and torn crests one meets in the main Rockies. Only eons of time and days of weathering have moulded the crags. Perhaps that is why there is individuality and a quality of serenity not found in most mountain ranges of the west.

The Black Hills with their forests, island outpost of the parent Rockies, laced with past conflict, redolent with colorful history, are rich with varied treasure. "Thar's gold in them thar hills," and part of the gold you will find there exists because fifty years ago the national forests were established in these mountains.

This is the year of the golden anniversary for our Black Hills forests; one way to celebrate it is to go there, see these forests we own, and enjoy the bounty they hold.

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Our Growing Water Problem

(*From page 399*)

are lightly guarded and some are not even under protection.

Closer regulation of livestock grazing is needed on both public and private land. If relieved of the heavy pressure and allowed a "breathing spell," the debilitated ranges would not only better protect the watersheds but ultimately, in some instances, support a larger number of livestock than at present. In other words, the kind of management that will protect and repair the damage to the soil will also help to rebuild the range.

The 140 million acres of national forests have very high value as watershed lands. They furnish the great bulk of usable water in the West. They protect watershed areas in many of the eastern states. Over the years the Forest Service has sought to institute a system of management, within the limits imposed by available manpower and funds, designed to check the depletion of soil and cover and rehabilitate some of the more damaged areas.

In the West, many national forest lands are improving under management. But grazing is still too heavy on some areas and in others there is too much game. Heavy cutting of timber has been permitted in localities where the character of the soil or steepness of slope indicates that it should have been done lightly or not at all. Skidding and logging methods are still largely unsatisfactory from the standpoint of watershed protection. And, though great strides have been made in preventing and controlling forest fires, both the size of the fires and the total area burned in some sections of the country is still far too large.

In the East most of the national forest lands were acquired after private ownership had stripped them of commercial timber, after they had been repeatedly burned over and the protective litter and humus destroyed. Under management most of these lands have greatly improved and some are now approaching a high level of watershed protection. But there are still numerous areas where mismanagement and damage have been so severe that it will take many years to rehabilitate them.

Conditions on watershed lands in private or state ownership are generally worse than on federal lands.

Watershed protection also coincides usually with greater timber production. In some forest types clear-cutting not only denies us a continuous crop of wood but reduces the litter cover and organic material in the soil and thus decreases its water-storage capacity. We know that eroded soils retard forest growth at the same time that they lead to the flushing of sediment into streams and reservoirs, to waste of water, and sometimes to alarming floods.

Regulation of logging practices is necessary in order to keep disturbances to the forest soil and damage to young trees and other plant growth at a minimum. Logging roads should be properly laid out and drained. Skid trails should be so planned that they will not form new gullies and channels, and be covered with brush or slash.

The revival of the big game population under such protection as is afforded by federal and state laws has presented in some cases a threat to the watersheds. Too many elk or deer on a watershed can be as injurious as excessive sheep or cattle. Systematic reduction of big game to a point commensurate with the volume of browse is needed. This calls for an overhauling of our hunting laws and regulations.

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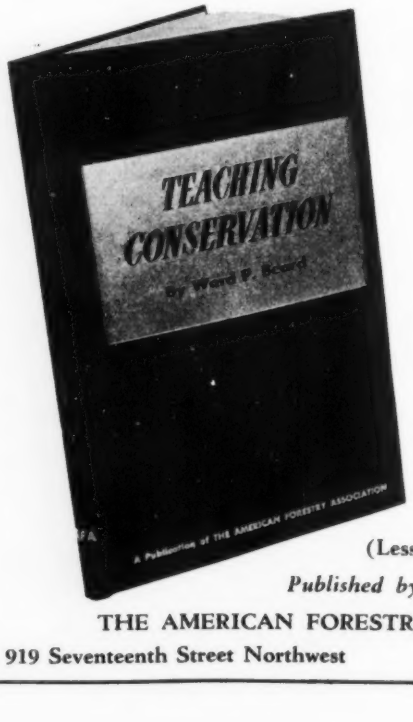
By WARD P. BEARD

Assistant Director, Vocational Education, U. S. Office of Education



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Road construction must also be controlled, particularly in the steep mountainous regions. High speed roads should be laid out with extreme care wherever geologic instability is in evidence and excess materials dumped where they cannot contribute sediment to stream channels.

Nature, of course, is constantly striving to repair the damage on deteriorated lands, but man can greatly step up the process. Cutover or burned over forests can be replanted, as the Forest Service has done on millions of acres in the national forests. Thinned out or chewed up ranges can be successfully reseeded—about 4,000,000 acres of the western range in public and private ownership have so far been revegetated.

On some of the more critical watersheds, such as eroded high mountain slopes, mechanical works like simple contour trenches can be installed to hold the soil until plants are re-established. Where erosion is highly accelerated, the engineering devices must be extended to the gullies and streams to keep the soil from moving into channels and reservoirs.

There are other measures we can take to correct watershed abuse. Certain critical areas should be entirely closed to grazing—as the Forest Service has done occasionally, notably on the Pike National Forest which protects the watershed of the city of Denver.

Areas of high fire risk should be barred to visitors more frequently than is generally the custom.

More important than all these measures, perhaps, is the need for putting into public ownership badly deteriorated watershed lands now under private control.

The watershed problems are not insoluble. We are tackling some of them in an effective manner, usually on the federal level of operations, and sometimes under the behest of aroused and long-suffering communities. But much —very much—remains to be done. The increasing interest of municipalities in clean water has led to interstate commissions designed to protect our watersheds, such as the Delaware and Potomac River commissions. Local waterworks bodies are pressing state legislatures to take remedial action. Water users' associations are extremely active in parts of the West.

In the long run, however, we will surmount our gigantic difficulties only to the extent that public consciousness is aroused and all the water users cooperate in a vigorous program to promote better land management and protect the stake we each have in the land.

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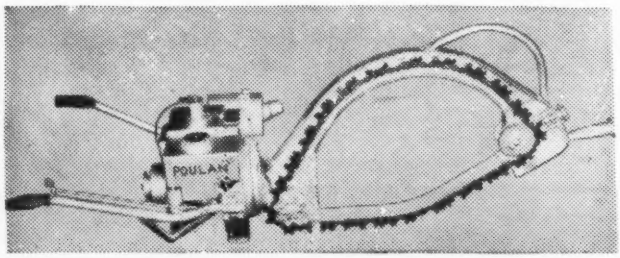

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Pulptimber Sale

Acceptance by the U. S. Forest Service of a bid for a billion-and-a-half cubic feet of timber in the Ketchikan pulptimber unit of the Tongass National Forest in southeast Alaska by the Ketchikan Pulp and Paper Company, an affiliate of the Puget Sound Pulp and Timber Company of Bellingham, Washington, was announced on August 2 by C. M. Granger, acting chief forester.

The bid contemplates the establishment of a modern pulp mill, involving the expenditure of from twenty to thirty million dollars, with an ultimate capacity of around 500 tons of pulp a day, at Ward's Cove six miles north of the city of Ketchikan. The company has already acquired a mill site on the cove. It is expected that the company will employ about 1,200 workers.

The bulk of the timber covered in the bid is on Prince of Wales Island. It is seventy-five percent hemlock and the balance mainly Sitka spruce with small amounts of Alaska and western cedar. Outstanding considerations in resource protection stipulated in the contract are the handling of the timber on a sustained-yield basis, the safeguarding of salmon spawning streams, the preservation of unusually fine scenic areas, and the prevention of stream pollution.

The bid was made on the basis of a fifty-year contract expiring June 30, 2002 A.D. and the company agreed to pay eighty-five cents per 100 cubic feet for timber cut for manufacture of pulp prior and up to July 1, 1962. Under the terms of the contract, the Ketchikan Company on August 2 tendered the chief forester a certified check for $25,000 payable to the Treasurer of the United States, and within seven days agreed to put up $75,000 more as an additional guarantee of qualification for final award and execution of the sales agreement within specified time limits.

• • • •

Photo Exhibit

Nature photographers, who have become potent factors in the teaching of conservation, will have their Fourth International Exhibition in February of next year at the Chicago Natural History Museum. This is the largest exhibition of its type in the world and pictures will be submitted by nature camera clubs from a number of countries. Deadline for entries is January 17, 1949, and entry forms may be obtained from H. J. Johnson, 1614 W. Adams, Chicago 12, Illinois.

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(*From page* 403)

profess a fondness for roughing it.

It was early Sunday morning when we arrived at our jumping-off place —Port Jerry, about one-third of the way up the western shoreline. We promptly splashed into the clear, cold water and shivered out the kinks we had gathered through the night on our bus ride from New York. After breakfast we assembled our camping gear from the outfit rental firm there, one of several in the region.

We found the trick in loading our eighteen-foot canoes is balance. The long heavy tent poles go in first, along the bottom of the canoe. Then up against the front of the middle brace or cross-bar is placed the seven by nine-foot Army wall tent, rolled so the fold is down to keep out the spray. Between the fore and mid braces are placed the folding steel fire grate, shovel, long-handled ax and sack of cooking and eating utensils as well as the wash-basin and dishpan. Between the mid and rear braces are placed the folding cots, one on either side of the tent poles, with canvas up to keep them from soaking in any water which might be shipped. Under the rear seat goes the water bucket, filled with tent pegs and clothesline, while into the bow is stuffed the kerosene lantern and bottle of extra oil.

All of this is the gear which is rented, including canoe. For two persons, each outfit rents for about $30 a week. Robinson Crusoe did no better.

Into the compartment with the cots are balanced the campers' rucksacks, filled with sleeping bags and a minimum of necessary personal duffel. Through the summer the chief daytime garb is the bathing suit. The days of fall compare with the cool evenings of the summer, calling for slacks or jeans and lumberjack shirts. During the summer day the hot sun, moderated by a continuing breeze, quickly tans most every camper's hide into a nutlike brown.

When all was loaded at Port Jerry we paddled across the lake into The Narrows, a large group of islands among which is Glen Island, site of the chief forest ranger station and including a post office and small store. After lunching here and securing a day's provisions we headed north to the Mother Bunch Islands, about mid-point up the lake. The total distance is about seven miles, and it was a good several hour pull against the wind for us office-desk refugees.

Here we visited the local ranger and received the permit for a large campsite in a cove on the north end of Floating Battery, largest island of the Mother Bunch. From this site the northern expanse of the lake reached forth pleasantly before our view, framed in the gently waving boughs of the pines and spruce about us. To the east on the near mainland Black Mountain towered over us, casting down its shadow of majestic silence. Far up and down the western shore the Tongue Mountain range pushed upward as though seeking to cradle the afternoon sun.

We quickly unloaded and lifted our canoes from the water, placing them upon their sides against a clump of bushes. Being our sole transportation we dare not think of scraping their new sleek finish upon the rocky shore. It just isn't done in the circle of camping elite.

We first scouted in the underbrush for dry sticks and wood and began a good fire. The girls started supper while the fellows busied themselves in erecting tents. Most everyone had quickly caught the group spirit and the chores were fun.

Near our tables was a triangle of tall pines and between these trees a platform of sticks had been built about four-and-a-half feet from the ground. On this shelf we placed two orange crates and filled them with our food provisions. At night we tied a poncho over the crates to keep out the weather and, as some of us had learned before, the little furry visitors in the dark.

But one such visitor it did not discourage. For several mornings the jam was found spilled, graham crackers scattered abroad, or the bread much nibbled upon. We tied the poncho tighter. Our nocturnal guest became craftier. We piled spare fire grates, pans and skillets upon the top to scare him should he knock them over. He didn't knock them over.

One morning we learned one of the girls had appointed herself watchman, involuntarily. Being a light sleeper she had been awakened the previous night by the furry fellow's scratching. Directing her flashlight upon the shelf she glimpsed only a large form retreating to the woods. Still awake some time later she heard him return, softly now. Again she shined her light and this time he heeded her not and went about his rooting to get into the food.

She stepped from her tent and approached within but a few steps be-

fore the bandit finally scampered. From this point she could clearly observe the animal, "a raccoon as big as a dog," she related. We were visited no more by the raccoon, but stories of his ventures began to reach us from other islands.

We climbed Black Mountain one afternoon and on the 2,665 foot summit obtained a magnificent panorama of the lake from the fire control tower there. To the eastern horizon lay Vermont amid gentle rolling hills and fields. The trees upon Tongue Mountain to the west appeared a soft, uneven covering of green velvet. It seemed when you reached toward them you could feel their fuzzy tickle in the palm of your hand. Directly below a large motorboat streaked its pattern upon the water as it crept between the islands.

Almost daily some of us paddled north a couple of miles to Hulett's Landing, a hotel and cottage retreat niched in the mountains along the east shore, and secured milk, fresh vegetables, meat and other staples. We mailed our camp-made birchbark post cards here, too, and at the ice house watched the cutting of ice taken from the lake during the winter. The cakes are packed deep in sawdust and keep the summer through.

The history surrounding Lake George is legendary. Long before the white man, the Iroquois paddled their canoes northward over it to war upon the Algonquins. The Iroquois called Lake George appropriately An-di-a-ta-roc-te, "There Where the Lake Is Shut In."

Visits to reconstructed Fort Ticonderoga, or "Ti" as it is known to nearby residents, and the ruins of other forts bear witness to countless bloody clashes between English and French and English and colonists on this historic waterway.

We enjoyed these daily visits to actual pages from history but even more satisfying were the nightly campfires which not infrequently brought guests from other nearby islands. We had two such get-togethers.

At our first party we baked a cake —in an oven made of large flat rocks.

There's something about a cool evening's campfire on a lake far away among the mountains which captures your heart. Maybe it's the friendship of those who share the fire's warm light. Or the curious curl of the smoke heavenward in steady ascent. Maybe it's the moon, flashing upon the water's ripples. Or nature's simple song—serene, composed—for you, and all, who would listen.

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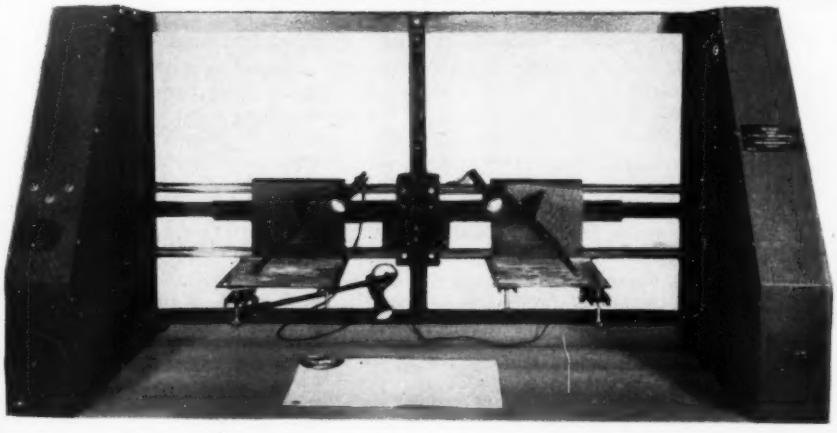

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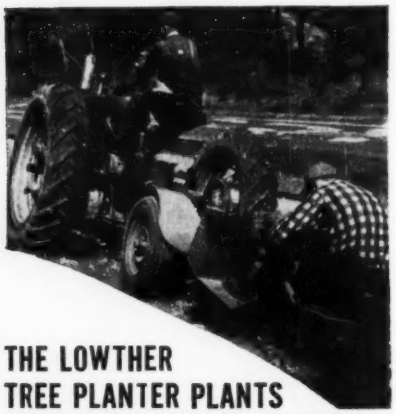

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Forests of Utah

(*From page* 407)

America, extends eastwards from the latitude of Salt Lake City, across northern Utah until it finally comes up against the Colorado Rockies.

The Uintas are a lofty range, their highest peak soaring to 13,498 feet, and with many rising above 12,000 feet. This highland is a lovely and majestic region, rivaling Glacier Park in the eyes of many travelers. Inaccessible and shunned by the pilots of commercial airlines by reason of its dangerous high points, this is one of the least known alpine beauty spots in North America. It contains large forest areas and considerable volumes of timber, in the western portion running largely to Douglasfir, spruce and lodgepole pine, but characterized by rather heavy stands of ponderosa pine farther east.

Along the various ranges which poke their sharp backbones above the tablelands, the latter in turn cut by flat-floored valleys, one may find ponderosa pine and Douglasfir, with Engelmann spruce and some lodgepole pine higher up. However, such mixtures tend to peter out in the southern region, where often the ponderosa pine reaches up to and over the higher summits.

Lowest point in Utah is the Colorado River canyon floor where it leaves the state. This deep gorge cuts across Utah's southeastern corner, through a vast arid plateau. Two highlands are found east of the Colorado, with peaks reaching above 12,000 feet. Two divisions of the La Sal National Forest are found in these areas, the southernmost boasting considerable volumes of commercial ponderosa pine.

As one of the so-called "Public Land" states, Utah still belongs rather largely to the federal government. Public domain grazing lands include not less than 4,280,000 acres of woodland in addition to open range. National forests contain approximately 3,169,000 acres of forest, while Indians own 393,000 acres of open type woods, and other federal holdings add up to about 73,500 acres. The state owns nearly 178,000 acres of non-commercial forest, while farmers have 114,000 acres and industrial concerns 33,000 acres.

Of commercial timberlands there are, according to U. S. Forest Service estimates, 1,530,000 acres, or 18 percent of the total area bearing trees (8,494,000 acres). In national forests are 1,276,000 acres; in other federal ownership 73,000 acres. The state and smaller civil subdivisions own 49,000 acres, farmers hold 106,000 acres, and industrial concerns keep title to 26,000 acres.

It is estimated also by the Forest Service that the total sawtimber stand on all commercial forest lands in Utah amounts to a bit more than four billion board feet (4,102 MM). On the national forests is 3,716,000,000 board feet, on other federal holdings 115,000,000 feet. State and county and smaller subdivisions have 123,000,000 board feet, farmers own 88,000,000 feet and industrialists have 60,000,000 board feet upon their lands. Altogether upon these lands is a stand of pole size timber estimated at 3,323,300 cords.

Because the public forests are remote they have been little exploited and today are composed largely of primeval or untouched stands. More than three-fourths of the area is still covered with sawtimber, and only ten percent is poorly stocked. Since most of the timber is in national forests it is reasonable to assume that Forest Service plans for future management will be carried out. On the basis of estimated growth of 17,500,000 board feet of sawtimber and 81,000 cords of poletimber each year at present, in the state, it is clear that good management demands greater production to permit greater growth. Present allowable cut is given tentatively as 43,500,000 board feet.

Against such an allowable output of timber from national and other forests, there is the record of production within the state far below yearly consumption of wood. For example, in 1943 the production of lumber reached its highest ever at 26,700,000 board feet. Yet there was consumed in the state no less than 214,000,000 board feet of lumber. While much of this increase was due to war needs, it is quite likely that consumption will remain not far below the figure mentioned, as a concomitant of industrial and agricultural development.

The character of forest industries deserves mention, since most of them are small, cutting less than 500,000 feet board measure in a year. For the most part they supply lumber for ranchers and small builders, leaving the higher quality markets to outside manufacturer and line yard. Yet there are no long term valid reasons why such an anomalous condition should continue; well organized small mill operators plus access roads into fed-

eral timber can be united to increase Utah lumber production.

It is true that stands are remote and many are light, especially in the case of much desired ponderosa pine. However, stumpage values are high and will remain sufficiently so to permit many new operations. The species present are fairly evenly divided among ponderosa pine (1.2 billion board feet), spruce (1.1 billion), lodgepole pine (1.0 billion) and Douglasfir (.5 billion board feet), and current demand affords market for all. In addition to lumber requirements there are markets for poles, fence posts, mining timbers and fuelwood. Reports indicate that considerable efforts are being made to get increased production.

The future promises more intensive management and increased production, chiefly from federal timberlands. Neither the state nor the private owners are sufficiently important to affect the output very much, although it is to be hoped that woodland management will become popular among farmers and industrial owners, and that state forestry will grow in importance and influence.

Destructive agencies are present in the public forests. Insects are working in several forest areas, widely scattered. Disease is present most noticeably in the form of limb rust that attacks ponderosa pine in southern Utah. While the common plaint of lack of funds for control is heard, it would seem that more intensive management might go a long way toward correcting this particular problem. Fortunately, fire is only a minor scourge in commercial forests. It does call for some attention in the farming areas and in general is well handled.

Utah is unique in having only a few hundred private woodland owners, yet forests are important in many ways. Watersheds, grazing, wildlife and wood production all demand attention of the forester and consideration of the public to the end that coordinated use may be worked out to the greatest public advantage. Perhaps as great a danger as may confront the people of the Beehive State is that of leaving too much to the public authorities and doing too little by themselves. Such a course would appear to be quite a departure from the habit of the early settlers. To put the matter another way, it might be profitable for Utahans to devote closer attention to public forest management policy and performance so that federal and state officers would feel a challenge to raise their past high level of accomplishment.

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Pulpwood Picnic

(*From page* 395)

ing them decide on the purchase of equipment, passing along new techniques and methods.

Often this advice goes beyond the woods itself. The aim of the company is to improve the landowner's overall economy since, however sold he may be on the desirability of practicing good forestry, he will not continue as a landowner unless he is operating on a sound economic basis. This involves cooperation with the Soil Conservation Service, county agents and others who also are concerned with the entire farm as a working unit.

For example, Glatfelter foresters have been successful in convincing farmers that one or two permanent employees on the farm are more desirable than a crew of itinerant laborers who come and go with the crops. By helping the farmer develop a farm plan — not just a woodland plan—they are able to integrate the use of labor and equipment on a year 'round basis.

When the Tree Farm movement came to Pennsylvania, the company forester became a member of the committee to stimulate interest in the state. Significantly enough, the state's first tree farm is owned and operated by the Glatfelter company. Over 600 acres in extent, it was selected because it typifies some of the best of the hardwood second-growth in southern Pennsylvania. The Tree Farm will serve as a demonstration forest for good pulpwood cutting practices. Here landowners will see the effect of good cutting practices, will have the methods explained by the working foresters — methods they can take home and apply to their own lands.

Last year, when the Glatfelter Tree Farm was dedicated, eight other properties were pledged to continuous crops of trees by cooperating pulpwood producers. From this small beginning, just a year ago, the number of tree farms in Pennsylvania has increased to seventy-five and the acreage to 2,971, and application for certification totalling 20,000 acres are on file with the tree farm committee.

How receptive are the farmers to the program? The 700 persons who attended this year's pulpwood picnic indicates considerably more than interest in a picnic alone. They all had a good time, as they do every year, but above that they came to learn from the demonstrations and exhibits better methods of making their woodlands pay continuing dividends. Most of them had been helped enough by previous picnics and other contacts with the company foresters to know that even an affair labeled "picnic" would be well worth taking time from a busy farm season to attend.

A typical example is that of a farmer who had never cut peeled pulpwood before the company forester visited him in 1939. He owns twenty acres of woodland, from which his only income had been a small amount from fuelwood cuttings. Since 1939, however, his twenty acres have netted him from $300 to $500 annually.

Another southern Pennsylvania farmer was able to increase his annual income by $800 after the company forester showed him how to use his hired hands to advantage in the woods when other work was slack on the farm. His woods previously had not even been considered a source of crops, but the forester helped him plan his operation, including how, where and when to sell the bark, posts, fuelwood, sawlogs and pulpwood.

Glatfelter forestry advice is also included in the timber supplier's contract:

"Trees under 9 inches in diameter one foot above the ground should not be cut, except such trees, the removal of which would benefit the timber stand. All young growth should be protected from injury and damage while cutting operations are being conducted. Burning and grazing of forest land should be guarded against.

"Careless cutting can make your woodland as unproductive and valueless as much of the land that has been cut over in the past.

"By wise cutting you can increase the growth of your timber and at the same time grow a new and better crop of forest products.

"Cut your woodland clean today, and it will produce no more products or money for you. The land will become a tax burden.

"Cut your timber carefully today, and it will be a source of continuous employment and money. The land will not be a tax burden and you will always have a thrifty stand of timber that is an excellent investment."

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Two years ago the company started a campaign to reforest and to promote strip cropping methods in the 72 square miles above Spring Grove which form the headwaters for the Codorus Creek. Cooperating with the state and federal agencies, the company had made progress with better farming and tree farming. The importance of this program to both mill and farmer can readily be realized from the history of the company's 50,000,000-gallon mill storage reservoir. In 1939, the reservoir was dredged at a cost of $75,000. Today, its average depth is only two feet instead of its original six to seven feet. This desposit in the reservoir is not only a bane to the company; more importantly to the local farmers, it is good topsoil which should still be on their fields.

To supplement waters of the Codorus, the company has established six reservoirs totaling 300,000,000 gallons capacity which can be drawn upon when the creek is low. They are well stocked with fish.

One problem in the use of water, however, is the vexatious one which puzzles most pulp and paper manufacturers—how to dispose of the mill wastes with a minimum of contamination. Glatfelter chemists are at work on this problem, for the company realizes that the country downstream is just as important as that through which the Codorus flows on its way to Spring Grove. Fishing is a great Pennsylvania sport and the company cannot afford to lose the support and interest of Pennsylvania sportsmen.

Visitors to the mill are often puzzled by tall "test" bottles conspicuously placed on shelves where operating and supervisory personnel may see them. The bottles contain hourly samples of the mill waste water. The color of the water and analyses by the company's chemists show just how much of the mill's chemicals is finding its way into the Codorus Creek. Reclaimed chemicals can be utilized; chemicals kept out of the waste stream mean double economy. Chemicals in the waste stream mean a loss to the plant and a higher degree of stream pollution.

A pilot plant now handles one-tenth of all the waste waters. It has been in continuous operation, 'round the clock, for the past six months, in an effort to solve one of the industry's toughest problems—the treatment of bleach waste residue. The immediate goal of the waste treatment program is the removal of all fiber, filler and other solid materials as well as chemicals.

The company utilizes both softwoods and hardwoods in its daily manufacture of around 200 tons of fine bleached papers. Not counting the wood cutters who supply the mill with its pulpwood, the company employs around 700 men and women.

Interesting are the by-products of paper making. From the pine pulp cooking the mill reclaims the raw turpentine. Lime sludge from the causticizing operations is sold to local farmers at fifty cents a truck load. Leecher carbon from the liquor reclaiming operations likewise is sold.

A significant bit of history is evident in the name of the town. Prior to 1864, the town was known as Spring Forge, the scene of early iron mining. Ideally situated, with good iron deposits, plenty of oak wood for use in iron processing, the town thrived—until the ore deposits were exhausted. Iron ore and wood alike were consumed by the industry, but wood—a renewable natural resource, if properly husbanded—remains as a major economic resource in the area long after the iron industry has been forgotten. Since 1864, the P. H. Glatfelter Company has been manufacturing paper at Spring Grove.

As Forester Hess likes to draw to the attention of visitors, "The iron was *mined* out and that industry is gone forever. If we continue to *grow* and *harvest* timber as a crop we'll still be producing pulpwood and other wood crops long after the year 2000 A.D."

AUTHORS

ARTHUR H. CARHART (*Golden Anniversary*) is a nationally-known writer whose current article was written in connection with the Fiftieth Anniversary Celebration of the Black Hills National Forest, September 19 at Nemo, South Dakota. LARRY CHRISTOPHER (*Nature: $80 F.O.B.*) is a young Washington, D. C., writer who also does radio work. A. G. HALL (*Pulpwood Picnic*) is associate editor of AMERICAN FORESTS. JACK R. WAGNER (*California Western*), a West Coast writer, is especially interested in railroad stories. JOHN B. WOODS (*Forests of Utah*) is a well known American forester who was director of the Forest Resource Appraisal.

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The American Forestry Association is a national organization—educational in character—for the advancement of the intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is (1) to bring about adequate protection and perpetuation of these resources by creating an enlightened public appreciation of the need of conserving them through wise use for the present and future welfare and enjoyment of all the people; (2) to make available to Americans in all walks of life a wider knowledge and appreciation of their forest resources and the part they can play in the social and industrial life of our nation.

The History MORE THAN half a century ago American men and women of vision, stirred by the rapid destruction of forests and forest life in the United States, began to raise their voices in behalf of conservation. Foreseeing the danger of allowing America's rich forests and vast natural wealth to be thoughtlessly wasted, these public-spirited individuals protested the needless destruction that was taking place. Out of their efforts came a collective force—The American Forestry Association, first organized in 1875 and made a national influence in 1882.

The Record THUS The American Forestry Association has a long record of efficient public service. The establishment of the United States Forest Service and the creation of the nationwide system of state and national forests and parks were due in no small part to the Association's efforts. Its educational work, extending over more than seventy years, has stimulated public action and built public support for protection against forest fires and floods; for prevention and control of soil erosion; for the development of conservation policies in forest management for continuous production through wise use; for the control of forest insects and diseases and the preservation of fish and wildlife.

The Support FROM AN ORGANIZATION of a few hundred members a half century ago, the Association has attained a substantial membership of many thousand men and women, living in every state of the Union and in foreign countries throughout the world. The funds of the Association are administered by a Board of Directors composed of individuals of national standing—men and women who give their services free, who have a practical understanding of the nation's present-day conservation needs, and are equipped through experience, ability, enthusiasm and training to advance the Association's program.

The Program BECAUSE OF its independent, non-political character, the work of The American Forestry Association is vitally necessary in the field of public service. It provides an unprejudiced influence for the development of sound conservation measures. It helps coordinate public, state and federal policies. It cooperates closely with federal, state and private agencies in conservation work. At the same time it initiates, sponsors and carries on needed projects in conservation in addition to its regular broad continuous program of education.

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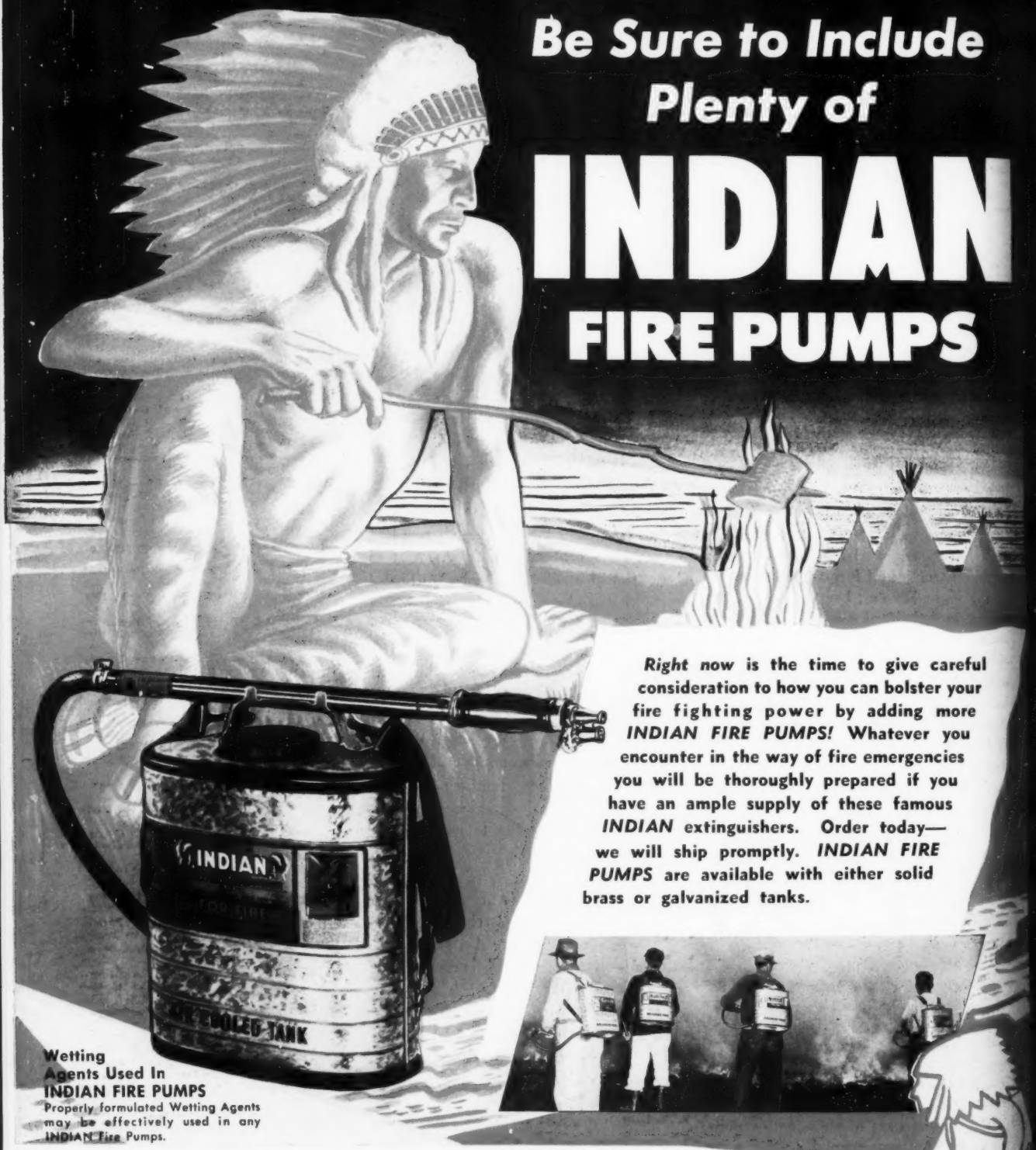

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